

## ARCHIVES OF OTOLOGY.

### A CONTRIBUTION TO THE SURGERY OF THE TEMPORAL BONE.

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#### III.—CHRONIC EMPYEMA OF THE MASTOID CELLS.

*(Continued from p. 493 of Vol. XXVII.)*

TO establish an accurate diagnosis of these uncommon cases of chronic empyema of the pneumatic cells in which the primary middle-ear lesion, either recent or old, is not in conspicuous evidence, and for which positive clinical features are necessarily uncertain, exploratory surgery is not alone justifiable, but necessary. It alone can disclose the nature and stage of whatever morbid changes may be present at once, and its disclosures often furnish great surprises. It indicates the imperative necessity of supplementary surgical measures which, if promptly and thoroughly carried out, will avert disastrous complications.

It is established on conclusive clinical evidence by the cases here referred to, and by general experience as well, that incarceration of pyogenic products of this region is most prone to occur in broken-down subjects and among convalescents from acute and chronic lesions of the mucous surfaces, especially of the upper respiratory tract, and often also of the gastro-intestinal tract.

A veritable choking up of the cells takes place without clinical attendants either local or constitutional; or these are incomplete and in some cases even entirely wanting.

In other words, the course of such a lesion begins imperceptibly and its subsequent progress is interminably protracted, with clinical evidences almost wholly latent

throughout, or until spontaneous rupture of the contents of the air sinuses takes place externally or internally. If this happens, as it will and must if not anticipated by surgical intervention, exploratory and radical, a definite clinical expression, as Bezold's mastoiditis, medial perforation, epidural and cerebral abscess, pachymeningitis, thrombosis and erosion of sigmoid sinuses, etc., will come about. Such cases, in which the real character of the morbid process is masked during the earlier stages, are of uncertain portent.

In illustration the following cases only are mentioned :

**CASE 10.—Chronic empyema followed by cortical perforation (Bezold) and subperiosteal dissection without perforation. Exploratory operation disclosed real nature. Recovery.**

A. G., æt. thirty-eight, Cincinnati, a woman of strong appearance, whose health, however, had during the last two years been undermined by repeated invasions of illness, was treated by her family physician for a subacute left middle-ear inflammation. The treatment was along lines ordinarily recommended and included rather vigorous inflation. Discharge was profuse and referred to as mucopurulent and stringy. Pain was marked at first only, but with rupture of the drumhead disappeared. Discharge ceased after several weeks, but an ill-defined distress over the mastoid region with frequent exacerbations of pain in the left brow and frontal region persistently remained. More than five months after the acute or subacute seizures, I saw the patient. There was no discharge. The drumhead was dull with perhaps slight peripheral injection. Inflation was easily accomplished and a little fluid was still present in the drum cavity. There was neither redness nor swelling over the mastoid, and pressure, even the firmest, did not cause pain. The auricle was not displaced. The lumen of the auditory canal was not altered. Pressure on the affected side, internal to and under the occipital protuberance, and firm pressure in the nape of the neck caused pain and brought on frontal headache.

During the following four weeks, these indefinite symptoms persisted, and though pain in or near the mastoid was never pronounced, it increased in the localities referred to. Movements of the head, especially to the opposite side, were difficult but not especially painful. There was no fever, but patient was dull and listless.

At this stage, or about six months after the onset of the subacute tympanic lesion, an exploratory operation, to be followed by whatever surgery should be found necessary, was finally consented to. It revealed a vascular, thickened, and adherent periosteum over the process, with extensive elevation and a dissecting trail, commencing near its tip and extending towards the occipital region and under surface of the skull.

Perforation of the periosteal covering could not be discovered and there was no infiltration of the soft parts.

After enlarging the external opening this was incised and a quantity of offensive pus escaped. Further exploration led at once to the discovery of several fistulous openings in the bone near the under, outer, and inner border of the tip. The cortex was greatly thickened. A large quantity of pus and granulation tissue filling the cells was removed. It was found that the deeper cells, or those adjacent to the antrum, were less involved, but these as well as the antrum were thoroughly exposed.

Bone perforation had resulted near the extreme tip of the process on its lateral and under surface in several places. The periosteum, however, had resisted the burrowing pus, and at the time of the operation there was no implication of the deep cellular fasciæ of the muscles. The subsequent course was favorable and the patient made a speedy recovery.

**CASE II.—Bezold mastoiditis: latent course, multiple external perforations of cortex with dissection and perforation of periosteum. Operation (Schwartz). Recovery.**

M. S., æt. twenty-four, a young medical student, residing at Falmouth, Ky., had a subacute left middle-ear lesion. This had been treated for several months by routine inflation. Then came about, gradually, pain and swelling, localized to the occipital region. At times, lasting for days, there developed a soreness of the entire scalp, which the least exertion increased. The discharge at one time was said to have been profuse, but never purulent. These symptoms continued for six months or longer. He became emaciated, and was dull and listless. His physicians incised what was supposed to be a suppurating lymphatic gland in the occipital region, and another on the left side of the neck. It can be inferred that these were the superficial pointings of trails of burrowing pus. At this stage he came to me. The tissues of the neck and occipital region over the entire left side and embracing the mastoid locality to the nape of the neck, were

the seat of a firm, œdematous swelling. The head was carried in a fixed position, and all movements were painful. General septic infection had taken place, evidenced by rigors and a high and rapidly fluctuating temperature with profuse perspiration.

Surgery was resorted to without delay. The entire mastoid was choked with pus, to its very tip and to the antrum. Numerous lateral perforations were found, which had discharged the contents of the infiltrated cells into the deep connective tissue and muscular septa. The entire affected region was exposed for inspection and effective drainage. The infiltration of the soft parts and the fistulous trails which were opened, healed slowly, but recovery finally ensued.

It is evident that in both cases more timely surgical interference would have averted complications which, in the last instance, might have resulted fatally.

The most marked illustration of Bezold mastoiditis which has fallen under my observation occurred in an old woman, broken down in health.

The entire early stages of empyema in this case, as in so many others like it, were wholly latent, and only a chronic, catarrhal middle-ear lesion, with occasional subacute remissions, could be assumed to be present, from the rather imperfect history obtained after the operation.

It is mentioned, not because of its rarity or uncommon expression of that variety of mastoiditis for which we are indebted to Bezold for such complete description and explanation, but because it was deemed expedient to amputate the auricle in addition to the most radical surgery for the bone lesion.

**CASE 12.—Bezold mastoiditis: multiple perforations of bone; dissecting trails; cachectic appearance. Recovery.**

On admission to the hospital, the patient, a woman, æt. sixty-eight, broken down in health and strength from poverty and disease, and with every evidence of general septic infection, was, without further inquiry concerning the antecedent history, prepared for immediate operation. The swelling and infiltration of the tissues of the neck, and in particular on the affected side, where numerous fistulous openings were found discharging offensive pus, were exceptionally marked.



The lumen of the auditory canal was contracted, and it was filled with pus and granulation tissue, the result of fistulous openings into and through the cartilaginous portion. The auricle itself was enormously swollen and discolored, and on its posterior and anterior side showed circumscribed elevations of the perichondrium. It was not markedly displaced, but as it was so hopelessly infiltrated and its attachment undermined by many fistulous tracts, it was amputated. After this followed the most radical surgery. The indications which rendered this necessary were unmistakable. The cells, antrum, and middle ear were fully exposed for inspection and treatment. The subsequent course of the case was tedious, but in the end favorable. Before the operation, facial paralysis was present, and this became more marked after the operation. The entire cortex was loosened by the pathological process, except above, owing to the numerous lateral perforations and those near the tip. With little difficulty it was lifted off entirely, as it was only necessary to detach the upper border of this region.

The recital of these cases only bears out known and accepted conclusions.

Formerly signal importance was attached to localized pain and swelling of the mastoid region, deflection of the auricle, and to abnormal temperature. They were in the main considered the symptomatic indications for surgical treatment. If found wanting, such interference was often not considered imperative; unnecessary, often fatal delay resulted, while surgery was looked upon as unjustifiable until a more positive declaration of the morbid process had come about.

Not infrequently, however, even in these much less common cases than those associated with chronic purulent processes of the middle ear, a lethal termination surprised the unconcerned and inactive surgeon.

An exploratory operation was rarely thought of or advised. In support of this statement, we have only to recall our own experiences with such cases, if it takes us back ten or fifteen years. It cannot fail to recall to mind unhappy memories.

The useless delay and absolute failure to appreciate the opportune moment for preventive surgery, in the present

light of our knowledge, can, in exceptional cases only, be charged to the aural surgeons.

We now know from common experience that these rare expressions of empyema are made conspicuous by the absence of one or all of the symptoms just referred to, and which formerly were considered so essential to justify surgical treatment.

In these cases, what shall guide or direct the advisability of preventive surgery in order to avert the more serious complications which are certain to happen? To this can be answered only, that it is the knowledge obtained through exploratory surgery, from individual and common experience. The absence of all the so-called cardinal symptoms is never a contra-indication to surgery, exploratory or otherwise. It is sufficient if the history refers to a recent or remote middle-ear lesion, even though it was known to have been only a catarrhal and not a purulent process, and if the patient manifests a dull or apathetic frame of mind, which persists, together with general lassitude and ill-defined but general headache on slight exertion,—the indications for interference are at hand.

Careful study of these cases suggests the following conclusions.

It not infrequently happens that chronic empyema of the air cells of the mastoid region develops not only after purulent otitis media, but also after acute and subacute catarrhal processes; the uncommon feature of these cases being *that the primary lesion of the middle ear is at no time in marked evidence. It would appear also that the focal lesion within the cells owes its origin not always to a direct extension from the tympanic cavity or antrum, but in some cases to a forcing or mysterious wandering of pyogenic products from the upper respiratory tract, along the Eustachian tubes, into (and this is a discovery disclosed by surgery) the most remote or external recesses of these air spaces of the temporal bone.*

Other less uncommon features are the imperceptible starting and interminably slow course as well as the uncertainty of the clinical features which accompany such cases. It is often only spontaneous perforation of the cor-

tical covering of the bone, or epidural abscess and dissection, or even more serious complications with almost certain declaration of their gravity, which point to or lead through surgery to the discovery of the real nature of the lesion.

Again it may happen that, *owing to the presence of a thick cortex or other individual peculiarity*, the gradual progress of the focal lesion within the cells does not excite the complications referred to, but *lights up afresh and suddenly an acute purulent process within the middle ear or antrum with general and local symptoms demanding immediate interference*.

My experience has furnished me with several cases confirming the truth of this last statement, and in conclusion of this subject, brief mention of a recent observation which bears upon this point is made.

**CASE 13.—Acute otitis media purulenta, chronic latent empyema of the cells, reinfection of the middle ear. Operation (Schwartz). Recovery.**

A rather frail and markedly neurotic woman, aged thirty-two, gave me the following brief history: Two days ago she began to suffer intense pain in the left ear and entire side of the head. Her physician had prescribed either a solution of cocaine or atropine. After the first instillations of the drops, the pain increased, and, as is usual in such cases, she assigned her sufferings to the medicine. Further inquiry brought out that for several months (five or six) she had subacute paroxysms of so-called grip, persistent cough, fever, and great prostration. She also complained of tinnitus constantly, with almost constant general headache which at times only, became more pronounced on the left side, especially in the frontal region. Examination disclosed an intact but injected and bulging drumhead. No swelling or redness of the mastoid region, and no displacement of the auricle. Only the firmest pressure, and this only in one locality, and made from below upwards against the tip of the process, caused pain. The pain in the head was general, but in the ear and left frontal region in particular, was violent; rigors were frequent, and temperature high.

Guided by experience in former similar cases, I did not paracentese the drumhead and resort to an expectant course, but on the same day opened the mastoid with the following disclosures: A succulent thick cortex, the superficial cells filled with pus and

granulation tissue, and as the deeper cells were reached a lesser amount of granulation but more pus. Owing to the general implication of the cells, it was necessary to expose the remotest cells of the tip and an unusually large opening in the bone had to be made. In spite of broncho-pneumonia, and temperature suggesting septic infection, with erysipelas of the wound, face, and scalp, she made a good recovery. No discharge occurred from the ear and the drum did not rupture. Whatever accumulation there was, found vent through the large and free communications of the antrum.

It is hardly a tenable inference that a collection of foetid pus and the large quantity of granulation tissue, such as was found in this case, could have resulted within the short period (60 hours) which intervened between the first violent pain and the operation. It is, in my judgment, an apt illustration of a sudden acute reinfection of the middle ear from the hidden pyogenic focus within the cells, which was originally started by a less virulent primary lesion of the same locality, but which was never even at its inception, or throughout the course of the secondary lesion, in marked evidence.

#### IV.—EPIDURAL ABSCESS AND DISSECTION.

Just as external osseous perforation, under the clinical picture, and after assuming a definite expression as Bezold mastoiditis, is not an infrequent sequence of an undiscovered chronic latent empyema of the cells, it also happens, although a more uncommon occurrence, that internal perforation of the bone, followed by epidural, cerebral, or cerebellar abscess, as well as other central complications, proceeds from the same cause.

The evidence herewith offered in support of this statement confirms those known conclusions, that erosion of the tegmen of the mastoid antrum or the thin roof of the adjacent pneumatic cells may be as insidious as the primary lesion within the cells. Clinically the secondary lesion is characterized by the same latent course which typifies the one of which it is only a more accentuated and dangerous complication. It is evident that external perforation, unless

preventive surgery intervenes, is more likely to happen than internal erosion of the bone.

This is accounted for, in certain cases of this uncommon class, because the pyogenic transplantation begins its destructive excavation in the outermost cells or those in the tip or adjacent to the cortex of the mastoid region. If, as is usual, the grade of inflammatory activity is low and the bone not abnormally thick, the most favorable conditions for an extension towards external ulceration are afforded. But here again we dare not lose sight of the many curious anomalies due to various causes, individual and acquired, which affect the thickness or thinness of the bone in this particular locality and which will in one way or another influence the progress and definite declaration of the morbid changes which are present.

It is precisely this point which is not sufficiently taken into account. Not until exploratory surgery discloses them can the results of former pathological processes, about which no positive information exists or can even be assumed, receive adequate recognition.

How often does it happen, that in some cases in which only the most indefinite history of an antecedent lesion can be obtained, and in others with almost certain knowledge of the absence of intra-tympanic disease and its complications, we, nevertheless, find pathological markings of the bone of the outer cortical wall and the tegmen of the tympanum and mastoid antrum, which in some cases are compensatory and sclerotic, in others are rarefactive and atrophic.

This known fact enables us to understand, not alone the treacherous and latent course of chronic empyema of the cells, but it directs our attention to one of the more uncommon causes for epidural, brain, or cerebellar abscess, sinus thrombosis, etc.

The following cases bear upon this statement.

**CASE 14.—Chronic empyema: absolutely latent course; internal osseous perforation; epidural abscess. Recovery.**

H. B., æt. thirty-eight, Carthage, O., a sturdy German with previous history of good health, had for many months sought relief in vain from intense, almost constant pain in the head. It



was not localized but general. During the last eight weeks it was constant, and prostration resulting from unrelieved suffering was excessive. Recently, also, the pain was frequently localized to the brow and left frontal region. For two weeks prior to his visit to me almost unbearable hammering and beating pain, which every jar or bodily movement intensified, was added. He was pale and haggard in appearance and moved about with caution and deliberation. He complained that the slightest attempt to stoop forwards or to exert himself intensified the pain in his head, which he could not localize. The least mental excitement also brought this about. He was dull and apathetic, and had frequent attacks of vertigo and syncope with profuse perspiration, often preceded by nausea, and he often vomited without cause.

An old discharge, which at times was foetid, was found in the left ear. This had not changed in amount or character for years. The meatus, especially the osseous portion, was of wide lumen, and carious localizations in and near the annulus tympanicus were found, as well as marked destructive changes on the part of the drumhead and ossicles. *There was absolutely no redness nor swelling, and not even tenderness over the mastoid process.* The auricle was not displaced. *The firmest pressure and most vigorous percussion failed to localize pain in this region.*

The operation resorted to for diagnostic and exploratory purposes disclosed an uncommonly thick and hard cortex. After this was ablated, and at considerable depth, an unusually large cavity, containing foetid pus, with extensive osseous erosion of the roof of the mastoid antrum and adjacent cells, was discovered. The dura was covered with thickened layers of caseated pus and florid granulations. A probe led to the further discovery of extensive burrowing of pus in the vicinity of the osseous erosion. The entire region was converted into one large cavity.

The subsequent progress was tedious, but favorable in the end.

In this case the extensive thickening of the cortex, produced in all probability as a result of a chronic process which had for years invaded the pneumatic spaces of the bone, was mainly responsible for the latent and uncertain clinical evidences, and also for the absence of every local sign. The secondary lesion was for the same reason equally insidious and latent until excessive increase of intra-cranial pressure and septic absorption called attention to it.

That an extra-dural abscess may long remain without positive clinical disclosures, mention is made of another case not directly concerned with these cases of latent chronic empyema, for in this one were present local evidences which suggested purulent infiltration of the bone.

CASE 15.—Chronic empyema: epidural abscess; erosion of tegmen of mastoid antrum. Operation: temporary relief. Eight months afterward epidural abscess, erosion of tegmen of tympanic cavity. Radical operation. Recovery.

In this case, M. H., æt. seventeen, Jackson, O., the evidences of a former Bezold mastoiditis were unmistakable. The fistulous openings and tracts had healed, and for almost two years there had been no external opening. A fœtid otorrhœa, however, persisted. There was slight swelling only, some redness (dusky discoloration, but no engorgement of the superficial venous channels of the tissues of the neck, and no evidences of overfilling or of obstruction when compression was resorted to), and great tenderness. Pressure against the mastoid region made the patient dizzy, followed by involuntary rotatory movements of the head, and she fainted easily. She was dull and depressed; her expression flaccid and anxious. The slightest exertion brought on perspiration. Septic infection, as evidenced by temperature, rigors, and prostration, was unmistakable.

The mastoid region was opened. The periosteum was thickened and adherent; the cortex was thin, and the texture of the bone throughout was soft and when removed disclosed one large irregular cavity full of pus and granulation tissue. An extensive osseous erosion in the roof of the mastoid antrum exposed the dura, which was undermined for a considerable distance by the pus. The sinus was exposed for inspection, but no evidence of thrombosis or obstruction was found.

The large opening was packed for weeks and was eventually permitted to close, but pain in the head, and especially dizziness, continued, nor did the patient regain her buoyancy of mind and body. She lost in flesh, was without energy, and from time to time, for weeks, had unmistakable septic fever and its attendants. After eight months she returned for further treatment. Suspecting an erosive lesion of the attic, the radical method to expose this region and further surgery for the old lesion were practiced.

In order to expose fully the epitympanic cavity, the middle fossa, owing to the thinness of the bone perhaps, was opened and

at once led to the discovery of an epidural abscess compressing the temporo-sphenoidal lobe. After removal of the entire anterior wall, an erosion of the bone in the roof of the tympanic cavity was found. The meatus was split after the suggestion of Stacke, and drainage and packing were effected through the meatus, and the posterior wound was allowed to close. Recovery after this was uneventful, and she gained rapidly and permanently in health.

This case does not properly belong to this category. It is mentioned to show how latent and uncertain are the evidences of internal osseous perforation and burrowing pus.

It is almost certain that this epidural abscess was present at the time of the first operation, starting from an independent focus, *i. e.*, the tegmen tympani, but was overlooked because it was overshadowed completely by the disclosures in the principal seat, the mastoid antrum and roof. Finding the pathological process so pronounced in this locality, it was assumed that all the symptoms could be accounted for, and as the most thorough and freest drainage was secured, it was not thought expedient to expose the epitympanic cavity during the first operation.

*(To be continued.)*

## THE APPLICATION OF HYDROCHLORIC ACID IN AFFECTIONS OF THE BONY WALLS OF THE TYMPANIC CAVITY AND THE MEATUS.

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**I**N vol. xviii., p. 123, of these ARCHIVES, I published an article entitled, "The Treatment of Necrosis and Caries of the Temporal Bone by Means of Acids." My experience at that time had extended over two years only, so that the article, as far as the clinical part was concerned, should be considered merely as a preliminary report.

The results were, however, so favorable, that they spurred me on to further investigations, which soon demonstrated that the application of acids, especially hydrochloric acid, might enable us, in many cases, to dispense with all other forms of treatment.

Since the publication of my first treatise 49 patients have been treated with hydrochloric acid up to July, 1896. As statistics are apt, however, to lead to erroneous results unless the material is most carefully tested, I will draw my conclusions only from those cases in which the records state that crepitation, the only sure sign of bone disease, was actually felt with the probe. This reduces the above number to 35. Of course, bone disease may be present even when, on account of outlying soft parts or inaccessibility, crepitation cannot be obtained. This applies especially to caries of the ossicles.

These 35 cases form my statistical basis for judging the effectiveness of the hydrochloric-acid treatment.

If we were to consider as cured such cases as were, at the completion of the treatment, freed from their discharge, and in which the only remaining subjective symptom was the functional impairment caused by the ravages of the bone disease, then the proportion of cured cases to those not cured would be as 24 to 11; that is, 70 per cent. would be cured.

These conclusions would, however, be more favorable than the facts warrant. For, considering that the disease is of such a chronic nature, we ought not to assume that a patient has been cured unless we have been able to ascertain that a recurrence has not taken place within a reasonably long time—that is, within about a year. I have been able to convince myself that 13 of the above 24 cases, which showed no symptoms at the end of the treatment, were definitely cured. The remaining 11, which I was unable to follow up, I therefore class as not cured.

I believe everybody will concede that the figures I obtain by this method, namely, 37 per cent. of cures among the whole 35 patients, do not give too favorable a result. In my opinion, I would arrive nearer to a correct result if I were to leave out altogether the cases which I was unable to see a year after the completion of the treatment. In that case the cures would amount to 13 out of 21, about 60 per cent. But taking into consideration the optimism to which one inclines in judging a method of treatment that one has devised oneself, it is safest to assume cures only in those cases in which a recurrence after a considerable period of time could surely be excluded.

Granting that only 37 per cent. of the patients are cured, the result is still so favorable as to make the general application of this method in practice desirable. Its advantages over operative treatment are, first, that it is entirely devoid of danger; and, secondly, that it allows the patient to continue without interruption with his occupation. It leaves no disfiguring scars, and, finally, it is so simple that it can be employed by any physician.

Proleptically, we would expect the best results in those cases where the acid can act directly on the diseased area of



bone without its being diffused over a large surface; for in this way the most favorable circumstances for the decalcification and later absorption of the bone exists. The best results would naturally be expected where the diseased bone is accessible to view. Next in order would be those cases in which the necrotic bone can be reached only with the probe. We cannot, however, summarily reach these conclusions from the statistics of my own practice; at least, not if we consider only the above-mentioned 21 cases.

Of these the diseased area involved:

Among the cured: in 5 cases the lateral wall of the attic as well as the inner end of the bony meatus; in 4 the inner wall of the tympanic cavity; in 2, larger portions of its walls; in 2, the meatus.

Among those not cured: in 2 cases the lateral wall of the attic; in 2, the upper posterior wall; in 1, large areas above and behind; in 2, the inner wall; in 2, the bony meatus.

Apart from the fact that these figures are too small to warrant drawing conclusions from them, they do not give the same clear insight into the actual circumstances that the case-books give. For the latter show that the best results are obtained when the acid can be made to act directly on the affected bone. But its situation is not the only determining factor; its extent, as well as the consideration whether it is in part covered by skin or mucous membrane, is also of great significance. This last condition is especially apt to affect the duration of the treatment unfavorably, as can best be illustrated by a few extracts from my case-books.

CASE 1.—Christine L., age fifty-six. Discharge from the right ear existed as long as she can remember. Only small remnants of the ear-drum are visible above. The mucous membrane is granulating and is partly covered by a polyp. After its removal, large areas of bare bone were visible on the promontory. After three applications of cotton steeped in 4% hydrochloric acid, crepitation could no longer be felt. The treatment lasted from the 9-20 of August, 1890, and from September 29, 1890, to February 7, 1891. Recently she wrote me that she has been free from her complaint since that time.

CASE 2.—Pernille B., age twenty-five. In both ears otorrhœa since she had scarlet fever at the age of five or six. R. a large polyp; L. granulating mucous membrane. Large loss of substance in both membranæ. After removal of the polyp, bare bone could be felt on the inner wall. The acid caused an extremely large swelling, white in color and like cartilage in consistence. Pricking into this with a needle caused punctate hemorrhages. The acid was applied four times. After absorption of the white swelling, the inner wall became covered with granulations. The discharge gradually ceased. Treatment lasted from July 1 to August 6, 1892. When I saw the patient last on June 30, 1893, the discharge had ceased in the right ear, but not in the left. The acid had not been applied there because no bare bone could be found.

CASE 3.—Miss M. L., age sixteen. Discharge from right ear for ten years. Posterior inferior portion of the membrana tympani destroyed. Behind the promontory, bare bone can be felt. The presence of a rather large but only slightly movable sequestrum could be made out. As I tried to remove it with the forceps, only a small piece followed. As further attempts caused pain, hydrochloric acid was applied. After two applications of the acid, the affected portion swelled considerably. No hemorrhages were visible after pricking the swelling. All odor disappeared and the discharge diminished markedly. Treatment was from July 9 to August 3, and from November 20 to December 12, 1895. Four applications of the acid were made. When I saw the patient last on September 14, 1897, there still was a little mucous, odorless discharge to be seen. The mucous membrane was smooth; behind the promontory, there was a depression. Bare bone not to be found.

In these three cases the affected portion was quite extensive; three or four applications of the acid, however, caused it to be absorbed. Perhaps curetting might have brought about a cure in as short or even a shorter time. We may, however, assume that the acid acts just as surely and much more mildly; besides, only few patients consent to an operation.

Whenever the diseased bone is covered in greater part with mucous membrane, the decalcification seems to progress considerably slower.

Two cases surely are in favor of this. One of them has already

been discussed (Case No. 4 of my first article). In this patient, crepitation could be felt at only one small spot. Each application of the acid provoked a very severe swelling of the promontory and the surrounding parts, but the discharge could not, in spite of continuous treatment, be made to cease, although it gradually became more scanty, so that now the patient need only dry her ear once or twice a week with a little cotton. She presents herself only once a month for examination, and is well pleased at having been spared an operation.

The second case was just like the previous one ; in this patient, a girl of six years, the promontory was also affected. She was treated about one year, with interruptions. The discharge is so moderate that it often cannot be noticed for months. Yet she is not entirely freed from it.

In the following case the cure was comparatively quick, although the disease was rather extensive :

CASE 4.—Shoemaker M., aged twenty-six. When nine years of age patient had scarlet fever and since then discharge from the right ear. Before he came to me in June, 1896, he had been in the State hospital for ear diseases, where an operation had been advised. The patient states that six months ago his face had become crooked and twitching had occurred in the right side of his upper lip. Of late he had been suffering considerably from headaches and dizziness.

The facial paralysis is almost complete ; the patient is very deaf on the right side ; otoscopically a rough necrotic area, partly covered with a half-dried offensive secretion, is visible. With irrigation two thin layers of bone, about 2 *sq. mm* in size, were removed. Thereafter the granulations were gently curetted away, and then a fairly large piece of cotton stuffed in four-per-cent. hydrochloric acid was inserted. On the following day no longer any odor. A few days later the facial paralysis was no longer complete, inasmuch as the patient could move the lower lid a little and at times could whistle. At the end of July only a slight paresis was noticeable. The headache and dizziness had entirely disappeared ; the discharge was but slight. After that, continuous improvement. From the beginning of August, 1896, he has presented himself to me only a few times. When I sent to him on May 2, 1898, he informed me that he had been entirely well the last few years. On a few occasions when he had "caught cold," a slight mucous discharge appeared in the ear ; the latter has now

been dry for several months. No secretion could be found either on inspection or by introducing a cotton-carrier. He can now completely close his eye ; whistling, however, requires some effort on his part. The acid had been applied five times.

In my last article I mentioned a case in which very extensive destruction of the upper portion of the internal wall and the overlying parts had been brought about by caries. The later course of the case was such that the cause of the bone disease had to be considered a reflex neurosis. Although the acid did achieve a diminution of the discharge and of the eczema of the auricle caused by it, as well as a decrease in the dizziness and unpleasant sensations in the head, still the discharge did not cease in spite of the prolonged application of the acid. After the patient had come to me twice a week for a year she grew tired of the treatment. When she returned after six months, she stated that the discharge as well as the subjective symptoms had suddenly ceased with the removal of some carious roots of teeth. Only after three years the discharge, accompanied by headache and dizziness, began anew after she had received a cold douche on the head during a bath. The affected parts at the time of the examination were covered by a thin, half-dried secretion.

In those numerous cases in which the lateral wall of the attic or the posterior, upper portion of the meatus are attacked, the action of the hydrochloric acid seemed to be especially favorable. This is just what we would expect, for in these cases the cotton soaked with acid can be introduced directly into the opening which generally is situated just above the head of the hammer. Thereby the cotton is kept in place so that the acid can act thoroughly upon the surrounding diseased bone. In my former article I discussed such a case, and several months ago I had the opportunity to see the patient again. During the past ten years the patient had experienced no recurrence of his former trouble. The appearance of the drum-membrane was the same as in the otoscopic picture made directly after the completion of the treatment.

In the subjoined case I was also able to convince myself that the cure was a permanent one :

CASE 5.—Thore K., age seventeen. When I first saw the patient, on November 11, 1888, he had been suffering for two years from discharge from the left ear. The watch was heard on the right side at a distance of 17 cm, on the left not until held against the auricle. The right membrane shows traces of an old otitis media; the left one is smooth and strongly injected. Above the head of the hammer is a crater-like hole, with yellow edges which are very deeply notched, especially below. The hammer is lower, and its upper end more prominent than normal. On the inflation of air, abundant râles can be heard in the tympanic cavity. When a probe, bent at a right angle, 2 mm from its end, is introduced into the hole at the upper border of the membrane, then turned so that the short arm points up and drawn outwards, crepitation can be felt. Treatment lasted till the end of April, 1889. The acid was applied no less than eleven times. Up to April 29, 1892, when I saw him last, there had been no recurrence. The otoscopic picture had not changed from the time the discharge ceased.

In six other cases in which the disease showed a similar picture (a hole at the upper border of the membrane and greater or less luxation of the hammer in a direction down and out), the discharge ceased with the acid treatment, the hole cicatrized, or at least became much smaller, and the hammer resumed its normal position. From none of these patients, however, have I been able to obtain later information.

The treatment in these cases is generally a rather protracted one. The cause for this was found to be the difficulty in obtaining free drainage for the secretion, even when an opening is made below. In the presence of these conditions, often

*the ossicles are affected.*

For this reason it is not rarely necessary to remove the hammer. In only 3 out of 6 cases in which I removed it from patients treated with the acid it was curious. Two of these 6 patients were not cured; of 1 I had no later reports; 3 were cured, but only 1 of them is counted among the cured cases, because I had to assume that in the other 2 cases it was the removal of the hammer and not



the treatment with the acid that effected the cure. None of the cases showed the least action of the acid upon the hammer. *From this I conclude that the hydrochloric-acid treatment is not indicated where the ossicles are the seat of the disease.*

#### DISEASE OF THE BONY MEATUS.

When the inner portions of the upper wall or the annulus are diseased, hydrochloric acid will often effect a cure in a very short time. It appears that it is better borne by the innermost part of the canal than by the outer. Even here, however, good results can be obtained if only a small area of bone is diseased; *but if larger areas are necrotic the treatment with acid is not suitable.*

CASE 6.—Hans V., age eighteen, came to me on April 27, 1889. From the time he was two or three years old there has been a discharge from his left ear. A polyp now projects about 12 mm from the external opening. The patient has suffered from intense headache during the last two weeks. When the polyp was removed, by means of a wire loop, a large amount of pus escaped. The small remains of the polyp were destroyed with chromic acid, whereupon bare bone could be felt at one small area. The patient left town, but returned after several weeks, as the headache had reappeared. After two applications of hydrochloric acid a whitish, triangular mass of cartilage appeared at the point of disease. After five days it was absorbed, and the hole almost cicatrized. On October 19, 1895, the patient was seen for the last time, having returned on account of an eczema in the outer ear canal. No discharge during the interval.

CASE 7.—Conductor J., age twenty-five, consulted me on October 19, 1886. Necrosis in the meatus. Discharge ceased after treatment of very few days' duration. Patient returned at the end of February, when there was discharge again. Granulations were found above in the canal, and with the probe bare bone could be felt in a depression a few millimetres in front of the membrane. When the acid was applied the first time the patient experienced such great pain that he fainted. The four following applications, however, were almost painless. The discharge ceased after three weeks' treatment. Thereafter no discharge till January, 1892. The use of hydrogen peroxide soon caused it to cease. No bone

disease could be found at that time, and since then the ear has remained dry.

CASE 8.—Plumber K., age sixty-five. When the patient first consulted me, on December 27, 1890, a polyp had existed in his left meatus for several years. The end of the polyp was visible in the external aperture. On account of the patient's sensitiveness I was not able to remove the polyp by means of the snare and therefore used chromic acid. This treatment caused it to disappear in three weeks, during which time the patient presented himself twice a week. Soon after the polyp again began to grow and when I saw the patient again I felt bare bone over a large area of the anterior wall. Toward the end of May the discharge diminished under antiseptic treatment, and for a time bare bone could not be felt. After a month, during which time I did not see the patient, the meatus had become very narrow on account of a swelling in the soft parts, while a projecting, bare edge of bone could be felt above. I now suggested an operation to the patient, but he did not consent. I therefore applied the acid. *After each of two applications he experienced severe pain, and during the third the pain became so unbearable that I had to omit the further use of the acid.* When the patient again presented himself in October of the same year the condition was unchanged. After that I did not see him again.

In my first article I already drew attention to the sensitiveness of the meatus to the action of acids, and cited an example which showed how even a 2-per-cent. solution of the acid can produce a necrosis in the skin of the meatus.

In cases like those mentioned above I have frequently used concentrated sulphuric acid and thereby achieved a more rapid cure. The pain is not especially great with this treatment and is of short duration.

Of course it is also possible to obtain the desired result by curetting.

When larger portions of the auditory canal are attacked, the removal of the diseased parts is positively indicated. According to my own experience the action of the acid is most favorable in those cases in which the tympanic cavity is the seat of disease, and therefore, that this method of treatment may not fall into disrepute, I would recommend it only for such cases. It can even be used in cases of

chronic purulent otitis in which no crepitation can be elicited, provided a cure is not effected within the proper time by means of the ordinary treatment. The acid can surely do no harm; on the contrary, since it has a marked germ-killing action, it will often be of use. This is plainly shown by the fact that the secretion becomes odorless. The occasionally very marked hyperæmia which may follow its use, always disappears in a few days. The use of the acid in doubtful cases has often resulted in my discovering disease of the bone which had up to that time escaped my attention. *For the diseased bony tissue always swells considerably under the influence of the acid.* If the diseased bone is connected with the healthy bone, the swelling, which is of a whitish color, becomes vascular; when pricked with a needle, dark blood-spots appear upon it. This does not happen, however, if the case is like that described under Case 3.

Inasmuch as the swelling is often considerable it might be feared that under certain circumstances pain would be caused. But only in one case have I known patient to complain of unpleasant beating or pressure in the ear after the treatment, which, by the way, might just as well have been due to hyperæmia.

In conclusion a few words about **the application of the acid.**

In cases where the bone was visible I spread the cotton soaked with a 4-per-cent. solution of the acid over it. On the following day I generally found the cotton still in the same place. If there is an opening in the upper part, the cotton is introduced into it, and removed the next day with a pair of forceps or a small hook, the latter being turned around in it. If the opening is rather large, the cotton may also be removed by irrigation. The acid is applied, generally, at intervals of a week. Otherwise I am governed by the extent to which the mass of cartilage is absorbed. If this process is complete and the discharge still continues, or again becomes offensive, I reapply the acid.

An after-treatment is sometimes required because the catarrh does not always cease together with the bone-disease.

## REMARKS ON MASTOID OPERATIONS, WITH A CASE OF BEZOLD'S MASTOIDITIS.

BY DR. E. GRUENING.

THE operative procedure practised by Schwartz on the mastoid process in acute inflammatory affections of this bony region has been described by his pupils as Schwartz's typical chiselling operation to open up the antrum mastoideum.

Though no objection can be raised to this wording, since it conveys the idea "*ex potiori fit denominatio*," it has nevertheless caused an erroneous estimate and a narrow construction of Schwartz's method, of which the exposure of the mastoid antrum constitutes the most important, yet by no means the sole feature. Schwartz says distinctly that the prime object of the operation is to lay bare the antrum and all pneumatic spaces which contain pus, and he criticises those operators who in the so-called Bezold's mastoiditis confine their attention to the tip of the mastoid and neglect the antrum.

The operation which I practise lays open the pneumatic cells of the mastoid and deals effectively not only with cases of pure antrum involvement, but also with complications on the part of the tip and its neighboring tissues. The operation consists in the systematic removal of the external wall of the mastoid process from the apex to the *linea temporalis*. I generally begin below, expose the terminal pneumatic spaces, remove pus, granulations, and diseased bone, and convert the cells into one spacious cavity. The relation of the sigmoid sinus to the antrum is then determined, and

the antrum generally reached without difficulty. The operation, which is essentially Schwartze's, has the advantage of securing a speedy and uninterrupted recovery without revision.

The following case demonstrates again that in purulent otitis media the perforation in the drumhead may close, hearing may be restored, and the patient may appear better, while the process of destruction continues in the direction of the sigmoid sinus and the tip of the mastoid. The history of the case is in brief as follows:

In June of 1898 the patient suffered from pain in the right ear. He was examined by an aurist, who pierced the drumhead. The pain subsided and the ear began to discharge. In about two weeks the patient considered his ear trouble at an end. A few weeks later he was attacked by violent chills. The diagnosis of malaria was made, and a change of air thought necessary. The patient was sent to the mountains, where he grew worse. He returned to the city and came to my office in the latter part of September. His right cheek and the retro-maxillary region were swollen, and the tip of the mastoid and an extensive post-mastoid area were tender. In the external auditory canal nothing abnormal was found. The drumhead was whole, and with the right ear the patient could hear my watch (audibility, 24 inches) at a distance of three inches, and follow ordinary conversation with ease. At the operation performed on October 1st the mastoid was exposed. The cortex appeared sound. When, however, the tendon of the sterno-cleido mastoid was detached a large quantity of pus welled up. Upon closer inspection it was found that the pus occupied the digastric fossa, had burrowed its way under the parotid gland, and also formed an abscess in the substance of the sterno-cleido-mastoid muscle.

These abscesses were freely opened, and it was necessary to cut through the parotid gland in order to reach the pus tracks. The hard cortex of the mastoid was then removed. No pus was found in the antrum, but its posterior wall showed a perforation which led into the groove of the sigmoid sinus, where a large collection of pus surrounded the vessel. In the tip of the mastoid and in the posterior wall of the apex cell perforations could be traced, which must have communicated with the substance of the sterno-cleido-mastoid muscle and the digastric fossa, respectively.



When all diseased bone had been removed and all pus tracks had been freely opened, I had before me a large cavity comprising the antrum, the groove of the lateral sinus, the digastric fossa, the substance of the parotid gland, and the substance of the sternomastoid muscle. The patient made an uninterrupted recovery, and the resulting scars are almost linear in form, and this may be due to the secondary closure of the wound attempted about two weeks after the principal operation.

A CASE OF ACUTE MASTOIDITIS (BEZOLD VARIETY), WITHOUT PERFORATION OF THE DRUM-MEMBRANE. OPERATION. RECOVERY.

By DR. ARNOLD H. KNAPP.

CASES of acute empyema of the mastoid process, with little or no apparent involvement of the middle ear, are uncommon; the following case presents some unusual features which may warrant its publication.

Mr. A. L., aged twenty-one years, applied for treatment at the New York Ophthalmic and Aural Institute on May 20, 1898, for loss of hearing and tinnitus in the left ear.

He is a man of medium build and rather poorly nourished. Family history negative. His previous health has been good, except that at the age of six he received an injury to his left hand, which was followed by "blood-poisoning," and required many months to heal. After measles, the hearing in the right ear was permanently impaired, though there never had been any otorrhœa. No symptoms of tuberculosis or syphilis. The present illness came on one week ago after a cold.

On examination: Left ear: conversational voice  $\frac{8}{8}$ , Rinne negative. The drum-membrane is intact, of normal color, and retracted. At its upper and posterior quadrant there is a slight prominence paler in color than the rest of the membrane, not tender, and without signs of an acute inflammation. After inflation, the hearing is improved. Mastoid region normal. Right ear: voice  $\frac{8}{8}$ . No high tones. Rinne negative. The drum-membrane is retracted and atrophic. No improvement after inflation. Nose and throat fairly normal. No pulmonary signs; no glandular enlargements. Irregular cicatrices on left hand and forearm.

The patient visited the clinic at intervals for six weeks. The hearing in the left ear, although it was at first improved by air inflation, grew gradually worse. The picture of the drum-membrane remained unchanged. The swelling at the upper and posterior quadrant persisted without ever showing any inflammatory signs. There never was any pain. In the night of July 15th the patient suddenly felt very severe pain in the region of the left ear. The area behind and below the ear became swollen and red; the pain continued to be very severe; the patient was prostrated and his temperature rose to  $101^{\circ}$ . On admission to the hospital, two days later, he presented the typical picture of an acute Bezold perforation, with torticollis and a painful swelling about the upper end of the sterno-mastoid. The entire mastoid region was tender. On otoscopic examination the appearance of the drum-membrane was unchanged; the same swelling at the upper and posterior quadrant, not continuous with the wall of the canal, and no signs of an acute inflammation. Temperature  $101^{\circ}$ . The patient was again examined thoroughly for any constitutional trouble, but with a negative result.

A free paracentesis was made into the prominent part of the membrana tympani; a minute quantity of bloody serum escaped. The patient was put to bed with an ice-cap on the ear. The symptoms were much relieved on the following day, but returned with renewed intensity on leaving off the ice. There never was any discharge from the paracentesis wound.

**Operation,** July 21st, under ether. The mastoid cortex was entirely removed; it appeared thickened, though otherwise normal. The mastoid cells were converted into one large cavity filled with pus, carious bone, and granulations. Pus could be seen issuing from a hole in the medial bony wall of mastoid, high up, directly beneath and in front of the antrum. A probe inserted in this opening led into a cavity covered externally by the mastoid tip and the sterno-mastoid muscle. The tendinous insertions were completely severed from the bone; the tip and the entire inner wall of the mastoid process to a line above the level of the perforation were removed, and the digastric fossa and styloid process exposed. The abscess cavity was thus freed of its bony walls. After careful curetting of the antrum the entire wound was packed with gauze. The soft parts closed in rapidly, and the wound was healed without any complication on September 1st. The hearing in the left ear returned quickly. On November

20th, left ear, whisper  $\frac{1}{2}$  ft. Rinne positive. The swelling in the drum-membrane disappeared, and the drum-membrane was thickened and depressed.

REMARKS.—The unusual course of the disease in this case is, I think, due to the morbid process affecting a tympanum already more or less diseased, as evidenced by the retracted drum-membrane and the condition of the other ear. The present illness caused a chronic inflammatory exudate at the aditus ad antrum, with a distinct swelling at the upper and posterior quadrant of the drum-membrane, which never extended to the walls of the canal; the only subjective symptoms referable to the middle ear were loss of hearing and tinnitus. The membrana tympani never showed the signs of an acute inflammation. An extensive paracentesis was followed by no discharge whatever. The exact date of the mastoid involvement cannot be stated. No characteristic symptoms appeared prior to the perforation through the median wall of the mastoid, at least seven weeks after the onset of the illness. Several of these facts favor the possibility of the disease being of a dyscrasic nature. With this in view I examined the patient thoroughly a number of times, but always without result; in particular I may mention that diabetes was not present. The prompt healing after operation, the character of the pus, and the pathological changes found, confirmed the uncomplicated nature of the process.

As regards the operative treatment of a perforation through the inner wall of the mastoid process, the desirability of removing the tip and the medial bony wall of the mastoid to a point above the site of the perforation is evident. The entire abscess-cavity is thereby exposed, freed of any overhanging bony wall, permitting the collapse of the soft parts, and the ready dressing of the remote parts of the wound.

## A PLEA FOR THE MORE ACCURATE DEFINITION OF TUNING-FORKS.

By J. ORNE GREEN, M.D., BOSTON, MASS.

THE tuning-fork has, of late years, become so important in tests of hearing, that a consideration of some of the difficulties encountered in understanding and comparing the tests of different observers is not out of place. While presenting absolutely nothing new, I venture to call attention to an old story easily forgotten and very generally ignored. The difficulties met with arise entirely from the different systems of notation used in different countries.

English	{	C	D	E	F	G	A	B
		bC #C	bD #D	bE #E	bF #F	bG #G	bA #A	bB #B
German	{	C	D	E	F	G	A	H
		bces #cis	bdes #dis	bees #eis	bfes #fis	bges #gis	baes #ais	bB #his

### NAMES OF NOTES OF THE GAMUT.

French	ut	re	mi	fa	sol	la	si
Italian	do	re	mi	fa	sol	la	si

### DESIGNATION OF THE DIFFERENT OCTAVES.

English and German	C <sub>11</sub>	C <sub>1</sub>	C	c	c'	c''	c'''	c''''	c'''''
French	ut <sub>-2</sub>	ut <sub>-1</sub>	ut <sub>1</sub>	ut <sub>2</sub>	ut <sub>3</sub>	ut <sub>4</sub>	ut <sub>5</sub>	ut <sub>6</sub>	ut <sub>7</sub>

### DESIGNATION OF THE OCTAVES SUGGESTED BY ZAHM.<sup>1</sup>

C <sub>-2</sub>	C <sub>-1</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>
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In designating the number of vibrations, in France the so-called semivibration (*vibration single*, or v. s.) is used, while in Germany, England, and America, the full vibration (*vibration double*, or v. d.) is used. Among physicists some-

<sup>1</sup> *Sound and Music*, by Rev. J. A. Zahm, C.S.C., Chicago, Ill., 1892.



times the v. s. and sometimes the v. d. appears to be the favorite.

The tuning-fork for orchestras is  $A_3$  of Zahm's notation.

The tuning-fork for pianos is  $C_4$  of Zahm's notation.

The pitch of these forks varies very much.<sup>1</sup>

Mersenne's $A_3$ (1648)	= 373.7 v. d.
Handel's $A_3$ (1751)	= 422.5 v. d.
Mozart's $A_3$ (1780)	= 421.6 v. d.
German Soc. of Physicists' $A_3$ (1834)	= 444. v. d.
French Normal Diapason $A_3$ (1859)	= 435. v. d.
French Standard $A_3$	= 435.45 v. d.
In England $A_3$ (1891)	= 454.7 v. d.
In New York $A_3$ (1891)	= 460.8 v. d.
Chickering Piano $A_3$ (1891)	= 451.7 v. d.
Steinway Piano $A_3$ (1891)	= 458. v. d.
German Standard $A_3$	= 440. v. d.
Physicists' $A_3$	= 426.6 v. d.
English Soc. of Arts, $C_4$	= 528. v. d.
Modern Concert Pitch $C_4$	= 540. v. d.
Physicists' $C_4$	= 512. v. d.

This "physicists' C" = 512 v. d. is the old theoretical pitch, viz., the ninth power of 2, which was proposed by Sauveur and adopted by Chladni.

It gives vibrations as follows:

$C_{-2}$	$C_{-1}$	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$	$C_6$	$C_7$
16	32	64	128	256	512	1024	2048	4096 v. d.

and is the standard adopted by most modern works on acoustics and should be the standard of all scientific acoustics.

A glance at the above facts shows how impossible it is for a writer to be accurately understood when he designates notes of the gamut, either by letters or names, or when he designates the octaves, unless he states what system he is using. In these days of close international intercourse it is not safe to assume even that the German necessarily uses the German system, or the Frenchman the French system. And even if an author does state what system he is using, his reader must be familiar with the various systems in use in different countries. Again, the number of vibrations of any given fork varies very much, so that even if the name of the note and the octave in which it lies is known, the

<sup>1</sup> *Op. cit.*

number of its vibrations is still an unknown quantity unless we know on what system it has been tuned. And still again, even if we know the number of vibrations, unless we are told that the enumeration is on the French or German system we cannot say whether the vibrations are single or double (v. s. or v. d.).

Recognizing this general confusion, the physicists have agreed upon the note C, giving five hundred and twelve double vibrations in the second, as the basis of their work, but, so far as I can learn, have not agreed upon any method of designating the octave in which the note lies, and we find it variously written as  $c''$ ,  $ut_4$ ,  $C_4$ . Can anything be more illogical and liable to error in writing, reading, or ready comprehension, than the English and German method of designating the octave by a large C, a small c, a small  $c'$  with one stroke above the line, or a large  $C_{..}$  with two strokes below the line, etc.?

Till some strong organization of influence enough to make itself generally felt has evolved order out of this chaos, it is in the interest of both authors and readers that any note to which reference is made should be described in full, and in no way, it seems to me, can this be done so succinctly as by giving the number of vibrations, and whether they are double or single, for example, fork 512 v. d., or C 1024 v. s., or F 682.4 v. d.

This is the more easily done as many of the manufacturers are now stamping their forks with the number of vibrations, and a still further advance will be made for international use when they will add, as some already do, to the enumeration of the vibrations the v. s. or v. d., which will then give the full description of the instrument. Whether v. d. or v. s. is used seems to me immaterial; probably each nation will continue the system now in common use: it is perfectly easy to multiply or divide by two if one wishes to reduce one system to the other.

By this method all doubt can be avoided; the author is spared the necessity of stating what system he is using, and the reader knows definitely and exactly what is meant.

## ON CONGENITAL CLOSURE OF THE CHOANÆ.

BY DR. EUGENE JOËL, GOTHÄ.

Translated and Abridged by Dr. J. A. SPALDING, Portland, Me.

THE number of reported cases of congenital closure of the choanæ has increased largely since the detailed and instructive paper by Schwendt in 1889.<sup>1</sup> Heymann's recent text-book<sup>2</sup> has a more recent and comprehensive summary of the whole subject by Kayser.

All of the cases still later reported<sup>3</sup> seem to be those of *typical* closure in the meaning of Schwendt, in which there is an actual congenital closure of the choanæ by bone, or membranous tissue, and not *atypical* or mere stenosis of the interior of the nose by extreme approximation of its walls, as described by Hopmann.<sup>4</sup> In the same class may be included those by Baumgarten, of "False Closure."<sup>5</sup>

Kayser classifies the fifty cases so far reported as intranasal, marginal, and retranasal. In the first class he places those which lie a few *mm* inward from the choanal orifice, so that the mirror shows the actual margins of the choanæ; in the second, those which lie exactly in the choanæ; and in the third, those in which, owing to membranous formations between the velum and roof of the

<sup>1</sup> Graduating Thesis, Basel, 1889.

<sup>2</sup> *Handbuch d. Laryngol. u. Rhinologie*, Band iii., "Verwachsung der Nase."

<sup>3</sup> Seven cases. Compare the original paper of Joël for literary references in the *Zeitsch. f. Ohr.*, vol. xxxiv., p. 25.—Transl.

<sup>4</sup> "Ueber cong. knöcherne Verengerungen. u. Verschlüsse d. Choanen," Langenbeck's *Arch.*, Band xxxvii., Heft 2, 1888. And two cases of complete unilateral closure of the choanæ, *Arch. f. Laryngol.*, i., p. 359.

<sup>5</sup> *Monats. f. Ohrenhrlkde.*, i., 1896.

pharynx, the choanæ cannot be seen by the rhinoscopic mirror.

The latter are not, in my opinion, to be considered as choanal contractions at all, but simply membranous formations in the naso-pharyngeal space simulating an actual closure.

In arranging these closures from a uniform point of view, we should consider whether they are unilateral or bilateral, complete or incomplete, bony or cuticular, or a combination of both. At present confusion prevails: for instance, Schwendt reports cases as bilateral, complete, and bony; Chiari, bilateral, imperfect, and membranous; Pluder, unilateral, total, and bony.

From my point of view, the annexed case should be entitled unilateral, complete, and mixed.

A lady of twenty-two consulted me in 1896 for long-standing nasal obstruction. She belonged to an apparently healthy family, and, according to her mother's statement, was not rachitic as a child, although the appearance of her upper jaw and the irregularity of her teeth seemed to suggest such a family trait. The two sides of her face were different, the left side flatter than the right, the palatal roof very high, the alveolar ridges prominent, and between them a very deep fissure almost like an inverted V, the whole appearance being different in every respect from that due to nasal breathing from adenoids in childhood.

The right nostril was unobstructed, but the left showed deviation and spur of the septum, swollen turbinates, and polypoid masses so that a deeper view was impossible. Rhinological examination showed no adenoids, but complete closure of the left choana by a pinkish membrane at the precise level of the choanal orifice. The tubal orifices were clear. Examination after cocaineization of the nostril, aided with digital naso-pharyngeal examination, proved complete closure on the left side.

Examination with a probe seemed to suggest, additionally, that the lower portion of the membranous formation was of an osseous nature, for a few *mm* above the floor of the nose, the upper portion being completely membranous.

The spur upon the nasal septum, the turbinates, and the polypi being got rid of by the cautery, the membranous portion of the obstruction in the left choana was then attacked with the galvano-

cautery and an opening made measuring about 2 by 1 *cm*, in an oblong ovoid, with the long axis vertical. I was unable to do anything with drainage tubes for maintaining open the artificial orifice, possibly owing to the very narrow canal. Such tubes suggested by Schwendt might work better in cases of bony atresia. With me they closed over at the end and slipped out of place. For that reason I relied on strips of gauze, and in a short time gained a permanent opening on the left side, a condition which has remained unchanged for the past two years, and the patient enjoys unobstructed nasal respiration.

The sense of smell, which before was quite defective on the left side, has now been considerably restored. The bony portion of the obstruction still remains *in situ*, but is not objectionable in the least.



## MOVABLE SPONGY OSTEOMA OF THE CARTILAGINOUS PORTION OF THE EXTERNAL AUDITORY MEATUS.

BY DR. EULENSTEIN, FRANKFORT-ON-THE-MAIN.

Translated and Abridged by Dr. J. A. SPALDING, Portland, Me.

Mr. H., aged thirty-six, consulted me in April, 1898, for deafness of a week's standing in the right ear. He had never been deaf before, nor ever had suppuration from his ears, and had no idea of the cause of the present trouble. The tests for hearing showed extreme deafness of the right ear by aërial conduction, and examination of the meatus found it reduced to a minute slit, owing to the presence of a tumor covered with normal epidermis. The contracted orifice was full of cerumen, so that deeper examination was impossible. The tumor was immovable, and so painful to the touch that circumspection in the examination was needful.

The tumor was diagnosticated as an exostosis. After removal of the cerumen, by syringing, the hearing became nearly normal. A few days later the patient was attacked with erysipelas of the right auricle and neighboring parts, starting apparently from the meatus. This was treated at home, and I did not see the patient again until September, when deafness had again ensued in the right ear. When I attempted to loosen the accumulated cerumen with a probe, I found to my astonishment that the tumor was movable with a rotary motion, and with a delicate touch I succeeded in gradually making my way entirely around it, thus proving that it was probably pedunculated not far within the meatus.—For that reason I doubted my former diagnosis, and proposed the removal with a snare, which could not, however, be accomplished, owing to the excessive pain produced by manipulation with the wire.

On renewing the attempt on the next day, the patient being anæsthetized, the tumor was easily and fully removed, passing the contracted meatus with a smacking sound. Its insertion was seen in the cartilaginous portion of the meatus; the hemorrhage was insignificant, and the little wound was tamponed with iodoform and soon cicatrized. The hearing became normal, and in a few days examination of the interior of the passage failed to show any disease in the conducting apparatus.

The little tumor was the size of a large pea, had no actual pedicle, felt bony hard, and on division with a knife gave the sound of bone. Macroscopically it was a spongy mass, resembling medullated bone. Microscopically it was diagnosticated as a typical exostosis with mucous medulla. The osseous trabeculæ contained numerous osteoblasts. The tumor was covered with a cornifying, stratified epithelium. There was no actual pedicle, its locality being suggested by a spot without epithelium. The irregular bony trabeculæ extended into the neighborhood of this spot, but did not attain the outer surface.

I have not been able to find a similar case in the literature accessible to me, but Delstanche has described one<sup>1</sup> in which the orifice was obturated by a broad, movable tumor, though the motility arose from softening due to pus-retention. Cocks's case<sup>2</sup> was one of bony metamorphosis of polypi in the course of chronic middle-ear suppuration. Then, again, Jacquemart speaks<sup>3</sup> of a movable exostosis in the bony part of the meatus, and finally Lichtenberg<sup>4</sup> mentions an osteoma of the cartilaginous portion, and asserts that it is the first on record.

I have no opinion to offer concerning the ætiology of this case. I am not positively sure that this tumor was immovable when I first saw it, but that proves nothing, because I had to be very gentle in my manipulation owing to the extreme sensitiveness of the patient. There are also mechanical considerations which may make a tumor filling the meatus seem immovable, as we often see in case of foreign bodies. It hardly seems worth while to refer the motility

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<sup>1</sup> *Des Tumeurs Osseuses du Conduit Auditif*. Brussels, 1891.

<sup>2</sup> *Zeitsch. f. Ohrenhklde.*, Band xiii., p. 172.

<sup>3</sup> *Rev. Mensuelle*, 1885.

<sup>4</sup> *Rev. Laryngologique*, 1891, No. 19.

in the late stage to accidental rupture of the pedicle, as has occasionally been observed in cases of exostoses. For, the microscopic examination failed to define such a fracture, and if it had occurred from an accident, the pain within the ear could not have escaped the patient's notice. Possibly the erysipelas softened the original point of attachment.

The tumor, lying as it did in the cartilaginous portion of the meatus, cannot be regarded as an exostosis, because such a growth can only exist on underlying bone. For that reason I entitle it an *osteoma*, as Lichtenberg has done in his case previously mentioned.

## A CONTRIBUTION TO DIPLACUSIS.

By DR. TEICHMANN, BERLIN.

Translated and Condensed by Dr. J. A. SPALDING, Portland, Me.

**I**F we understand by diplacusis, or double hearing, a functional alteration in which an objective tone is heard double, then all of those cases which have been called diplacusis binauralis, and distinguished by a tone being heard by one ear higher, lower, or later than by the other, must properly be called paracusis, or hearing differently. These affections occur transitorily during acute middle-ear inflammation, or permanently in chronic cases. But of genuine diplacusis, that is to say diplacusis in one ear, Gradenigo asserts that he has never been able to find a case in literature.<sup>1</sup> There is, however, a case which he cites<sup>2</sup> from Selm, which must be regarded as typical double hearing, for the C fork and the a<sup>1</sup> fork were perceived double in each ear by bone-conduction; and two others of his own: one in a woman with middle-ear inflammation who heard the forks c<sup>3</sup>, c<sup>4</sup>, and c<sup>5</sup> double, by aërial conduction, some five seconds before they ceased to vibrate,—not being musical she could not tell the difference in pitch; and a second patient with double middle-ear catarrh, perceived in the second to the fourth-marked octaves higher and lower harmonic (third, fourth), both by air- and bone-conduction, as the fundamental tone died away.

In absence of other literary references I will now report my own personal experience.

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<sup>1</sup> Vol. xxvii., p. 269, of these ARCHIVES contains a report of two cases published by Etiévant. Translated in the *Annales des mal. de l'or.*, No. II, 1897.

<sup>2</sup> Gradenigo, "Krankheiten des Labyrinthes u. d. Nerv. acustic.," Schwartz's *Hand-Buch*, Bd. ii., 1893.

My hearing is good, and I have no recollection of suffering from any aural disease in childhood. A recent objective examination showed my ears in a normal condition. I am musical and I have a well attuned ear. Whilst making some tuning-fork tests a year ago, I made the following discoveries which remain the same to this date. When the fork  $c^4$  is dying away before my ears, a few seconds before it ceases, I hear a second tone, a minor third below. The harder the fork is hit, the longer before I hear the second tone. When the fork is hit softly, I hear the second tone almost instantly. This minor third is less intense than the original, begins suddenly with a delicate buzzing, and dies away gradually with the original note. If I am at all nervous, the intensity of the second tone is increased. The longer I go on with my tests, the louder and the more distinct the perception. It occurs on both sides, but is not so powerful on the left as on the right. The relation of bone-conduction cannot be determined because with so high a subjective tone aërial conduction cannot be excluded. These sensations cannot be produced with any other forks, except that with  $f^{\sharp 4}$  an indefinable buzzing is heard.

It is hardly worth objecting that my own forks may be defective in make, but I will mention that other persons have tested my forks and fail to hear double, and that on testing with similar forks belonging to other persons the same sensations are invariably perceived as above described.

In explanation of diplacusis I must agree with Gradenigo, that it is an abnormal increase of physiological processes (transmission of excitations, etc.), and originating in the labyrinth and nerve centres. I was at first inclined to regard it as purely central, as an abnormally facilitated transmission of irritation along frequently employed paths of association. The fact that when the fork is struck with greater force, the second tone is heard later than when the fork is struck gently, seems to argue against this view, because one would think that a stronger irritation would be the more easily transmitted of the two. The retardation, however, can be explained by the louder objective tone completely "covering," at first, the subjective tone. But in point of fact the second tone, even with a harder blow, is earlier heard *the farther the fork is held from the ear*.

I was soon to learn that diplacusis may depend on peripheral



causes. For, being detained by an accident one rather cool summer evening on the back seat of an open electric car in the open air, I felt a slight coldness in my right ear, and on reaching home a ringing and roaring in the same ear. The next day the ringing remained constant, and could not be altered either by closure of the meatus, pressure on the vessels of the neck, or by Valsalva. Most tones, and some voices, in the middle register felt disagreeable. The right ear was moderately deaf; could not, for instance, be used in telephoning. Perception was reduced for the  $c^1$  and  $c^2$  forks. Aërial conduction gave false tones:  $c^1$  became  $c^{\sharp 1}$ ,  $c^3$  became  $c^{\sharp 3}$ ;  $A^1$  gave no tone but only a sound like a factory whistle;  $c^2$  sounded like  $f^2$ , but later in the day the subjective sound was like  $c^2$ . The left ear remained normal.

On the next day the tinnitus was not so constant, but was perceived after coughing, or blowing the nose, or in a noisy street, and still pitched at  $c^2$ ; the  $c^2$  fork sounding dull but with a distinct overtone of  $f^2$ . Later still the subjective tone became double, between  $h^1$  and  $f^2$ . Improvement came slowly, but even after several days the fork  $c^2$  was accompanied with a double tone on  $e^2$  in the right ear, as the ground tone died away.

In this case a peripheral irritation caused *diplacusis binauralis dysharmonica*. The double tone of the subjective note is worth emphasizing. The affection was probably rheumatic in its origin, with a doubtful localization. A purely middle-ear or tubal affection could be excluded by Weber's test and abbreviation of bone-conduction. A purely labyrinthine affection was excluded by normal perception of the  $c^2$  fork by bone-conduction, false hearing by aërial conduction, and alterations in perception after the air bag. So that we are left to assume a combination of middle-ear and labyrinthine disease. I agree with Jacobson,<sup>1</sup> that false hearing cannot be explained by middle-ear alterations, and at all events my case proves that diplacusis may depend upon, or can at least be explained by, some peripheral affection.

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1. GRADENIGO, "Die Krankheiten des Labyrinthes u. d. Nervus acusticus," SCHWARTZE's *Hand-Buch d. Ohrenhlkde.*, Bd. ii., 1893.
2. VAN SELM, *Zur Casuistik des Doppelthörens*. Inaug. Dissert., Berlin, 1889.
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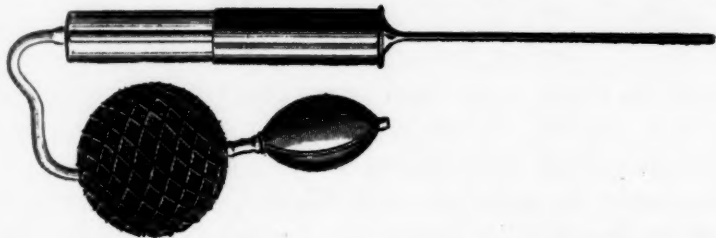
<sup>1</sup> *Lehrbuch d. Ohrenhlkde.*, 2te Aufl., 1898.

## DRY AIR IN THE TREATMENT OF SUPPURATION OF THE MIDDLE EAR.

By JOSEPH A. ANDREWS, M.D., NEW YORK.

THE application of dry air in the treatment of suppuration of the middle ear has been attended with such favorable results in my hands that I wish others to know of the means employed in carrying out this form of treatment.

We know that a dry soil is unfavorable to the growth of bacteria. It is upon this knowledge that the dry-air treatment is based. It is, of course, not possible to dry the



middle ear in the same thorough manner as a bone cavity can be dried by similar means; but the apparatus figured above dries the middle ear more thoroughly than can be done by any other means known to me. The instrument employed is a modification of the one which I exhibited at a meeting of the American Otological Society several years ago, a modified form of which was figured in the *London Lancet*, Dec. 20, 1890. It was designed to apply powders to the middle ear. The present design is practically the same instrument, to which a wooden or glass handle has been added, to enable the surgeon to hold it while the cylinder is hot and in use. Absorbent cotton is placed into the cylin-

der to protect the drum cavity from particles of dust which may be in the bulb. The air is furnished by means of the double air-bulb (Lucae) used to operate the Paquelin thermocautery and is worked by the patient, thus leaving the operator's two hands free. The metal portion of the instrument is heated over a spirit lamp. The air is thus heated on its way through the metal cylinder. The air should always be tested before being blown into the ear, as it is sometimes too hot. The object of the long narrow canula attached to the cylinder is to enable the operator to direct the stream of air to different parts of the drum cavity while the latter is illuminated by means of the forehead mirror.

The instrument may also be used for blowing powder into the drum cavity. Of course this form of instrument is but a means to an end. It is not intended that it shall in any sense take the place of the proper means employed to destroy granulations, etc., in the drum cavity, which must be first destroyed and the ear thoroughly cleansed before the dry air is applied. I have employed this form of treatment for six years and I am convinced that it is a valuable aid in the treatment of suppuration of the middle ear. The dentist uses a somewhat similar instrument for the purpose of drying the tooth cavity preparatory to putting in the filling; the air in his instrument being heated as it passes over a platinum wire which is heated by electricity.

This instrument is manufactured by E. B. Meyrowitz, 104 East 23d Street, New York.

REPORT ON THE SECTION OF LARYNGOLOGY  
AND OTOTOLOGY OF THE BRITISH MEDICAL  
ASSOCIATION. ANNUAL MEETING, EDIN-  
BURGH, 1898.

BY LOGAN TURNER, M.B., F.R.C.S., ED., HON. SEC.  
TO THE SECTION.

President : Dr. P. McBRIDE.

The President, after cordially welcoming the members to the Scottish capital, introduced the business of the Section in an address upon "The Expansion of Laryngology and Otology."

He dealt with the great increase in literary activity and commented on some of the most striking national peculiarities in the literature of these special subjects. The Anglo-Saxon writer, he considered, aimed at brevity, and tended to put on record the practical rather than the purely scientific and theoretical aspect of his subject. The German author, on the other hand, was eminently attentive to detail and had a strong tendency to discuss the subject from every possible point of view and not always in the fewest possible words. Some Germans have a tendency to polemic writing and at times even to personality. It must, however, be admitted that at the present time the best literature emanates from Germany. While much excellent work came from France, it appeared as if the amount of material did not quite justify the existence of all the journals which are devoted to these specialties in the French language.

Turning from national to individual characteristics, Dr. McBRIDE proceeded to say that the best type of author was he who had something new and valuable to communicate. A less praiseworthy type of writer was found in the specialist who magnified some new remedy, which often proved successful in the hands of

the inventor only, and again the same type was found in that man who, with a limited knowledge of general medical and surgical science, tended to magnify the importance of one special organ.

The subject selected for discussion was : **The Mutual Relationship and Relative Value of Experimental Research and Clinical Experience in Laryngology, Rhinology, and Otology.**

Sir FELIX SEMON (London) introduced the discussion in its bearing upon **laryngology**.

Dr. GREVILLE MACDONALD (London) continued the discussion in its **rhinological** aspect. The function of the nose in warming, moistening, and filtering the inspired air was surmised before any experimental investigation had been made in connection with it. Experiment, however, and laboratory investigation confirmed clinical observations. It was shown that the amount of moisture taken up by the inspired air varied (*a*) with the rapidity of the inspiratory act, (*b*) with the degree of patency of the nasal passages, and (*c*) with the degree of turgescence of the erectile tissue. This last fact was important in relation to pathological conditions of the erectile tissue, and further on account of the reckless manner in which the inferior turbinated bodies are condemned by certain rhinologists to the most ruthless eradication. Experimental investigation has shown further that a mucous membrane over which air passes shares to a considerable extent in the lung functions themselves. St. Clair Thomson and others have shown also the great filtering functions of the nose, which coincide with the remarkable tolerance that the nose exhibits towards abuse on the part of septic instruments and atmospheres teeming with organisms. Dr. MacDonald next referred to the nasal reflex phenomena, which were scarcely susceptible of physiological demonstration, and hence the study of their physiology from a clinical standpoint became more interesting. He concluded by saying that while physiological experiment was of help in clinical work, clinical observation helped even more in practical work, provided that we did not allow it to misguide us into physiological conclusions.

Dr. WILLIAM MILLIGAN (Manchester) next proceeded to show how much **otology** had benefited by research. He referred in the first place to the effects of experiment on the etiology and treatment of auditory furunculosis, and cited the experiments



of Löwenberg, who was able to produce furuncle by introducing staphylococci under the epidermis.

Turning next to suppurative diseases of the middle ear, he drew attention to the various organisms that might be met with in the tympanum: the staphylococcus albus et aureus, the streptococcus pyogenes, the pneumococcus of Fränkel, and the pneumobacillus of Friedländer. The streptococcus had been proved by careful bacteriological investigation to be the one most frequently met with in septic thrombosis, intracranial abscess, and septic infections of the pia-arachnoid. If the fluid, effused into the tympanic cavity in acute catarrhal conditions, is not at first purulent, as shown recently by Woods of Dublin, and if the organisms named are introduced from without through a ruptured membrane or after incision, then the indications for suitable and thorough antiseptic treatment of the external auditory meatus have been clearly laid down. In reference to this part of the subject, Dr. Milligan dealt with the discovery of the anti-streptococcic serum, and referred to the researches of Behring, Marmorek, Petruschky, Aronson, and Schenk in this field. His own experience went to show at the present time that the serum exerted very slight, if any, influence upon the course of acute streptococcal poisoning in man. Tubercular disease of the middle ear and its adnexa had been assisted, both in the way of diagnosis and treatment, through the results of experimental work. By inoculation experiments an infallible test was given us. The etiology of these cases of tubercular disease of the middle ear and the mode of entrance of the bacilli were points of considerable importance, and the question arose as to how far adenoid vegetations in the naso-pharynx might be the direct means of infecting the middle ear with tubercle through the Eustachian tubes. The researches of various workers into the presence of tubercle in adenoids were quoted, including a series of inoculation experiments made by the author himself, in which he had found 16.4 per cent. of the vegetations tuberculous. All these facts which had been quoted showed how close was the relation between experiment and our present knowledge of diseases of the ear.

Dr. Milligan proceeded to discuss in the next place how much had been learned of the functions of the internal ear from experiments; with regard to the central auditory apparatus, pathological observations supported experiment in *assigning to the left*

*superior temporo-sphenoidal convolution the important rôle of cortical centre for audition, while clinical observations pointed to the existence of a definite connection between the cortical centre of the one side and the auditory organ of the other.* Auditory function has, however, been assigned to other centres. The actual paths of communication between the cortical centres and the roots of the auditory nerves were as yet imperfectly understood.

An accurate knowledge of the topography of the brain was essential for localizing intracranial complications of middle-ear disease. An exact diagnosis of every complication was hardly possible, but in conclusion Dr. Milligan dealt with the diagnostic utility of lumbar puncture in determining the existence or non-existence of an accompanying meningitis in cases of mixed intracranial infections.

**Dr. MIDDLEMAS HUNT (Liverpool): On the Relation of Fibrinous Rhinitis to Diphtheria.**

Three cases were related, which presented the clinical characters of fibrinous rhinitis, but all of them were so allied to diphtheria as to make a diagnosis on clinical evidence alone a matter of distrust.

**CASE 1.**—A medical man with nasal obstruction and watery discharge for about a week. On examination, both nasal passages were found lined with a well formed, thick, white membrane, bleeding when torn off. There were no constitutional symptoms. Fibrinous rhinitis was diagnosed. Subsequently a membrane formed on the fauces and paralysis followed, rendering the diagnosis of diphtheria undoubted.

**CASE 2.**—A little girl showed the same symptoms and appearances as in the previous case, but the membrane was thinner and more friable; there was no fever, no albumin, and no glandular enlargement. Inoculations from the membrane were negative, and cultures showed only streptococci and staphylococci. Subsequent inquiry, however, showed that the patient had had "tonsillitis" a month or two before, followed by paralysis of the palate, and some other children associated with her had been laid up with sore throats.

**CASE 3.**—A little girl, with nasal obstruction and discharge from the left nostril, which had begun with a cold in the head eight weeks before. She never had sore throat during the eight weeks. On examination, a recent adhesion was seen between the anterior end of the left inferior turbinal and the septum, and

some patches of membrane were seen behind that. There were no enlarged glands, no albumin, and no paralysis. A servant in the same house had a sore throat, and was subsequently treated for diphtheritic paralysis. The week after the servant's illness, a brother of the little girl died from croup.

*Summary :*

1. While admitting that other bacteria besides the diphtheria bacillus may give rise to membranous exudation in the nasal passages, the vast majority of cases of fibrinous rhinitis are due to the Loeffler bacillus.

2. That it is impossible on clinical grounds alone to distinguish fibrinous rhinitis from mild nasal diphtheria.

3. That all cases of fibrinous rhinitis should be regarded as diphtheria until the contrary has been proved by reliable bacteriological investigation.

**DR. L. H. PEGLER : An Operation for the Deformity Arising from Fracture of the Triangular Cartilage of the Nose.**

There was present a depressed and sunken condition of the triangular cartilage, which together with the lateral cartilages was detached from the nasal bones. In the interior of the nose there was seen a prominent cartilaginous spur projecting into the left fossa, and the triangular cartilage appeared to have been split into two lateral portions.

The operation consisted in dissecting back the integuments from the nasal bones by a mesial dorsal incision. A stout silver wire was passed through the depressed cartilages from side to side, incorporating the two surfaces that appeared to have been separated, and taking care not to encroach upon the mucous cavities. The cartilage could now be raised by this wire. The second half of the operation consisted in sawing through the projecting angle of the nasal bones from above obliquely downwards and forwards until the cartilaginous articular surface was reached, and at this point the detached piece (consisting in reality of two portions, a larger on the right, chiefly cartilage, and a smaller, bony, on the left) was turned down and made to assist in filling up the hollow below. A hole was next drilled through the nasal bone, above the sawn surface, and one end of the wire which had been employed to perforate the triangular cartilage was carried through it. In this way gentle upward traction could be made upon the depressed portion, so as to cause it to regain to some

extent its old position. The ends of the wire were next brought together, twisted over the turned-down fragments of bone and cartilage, and trimmed so as to lie quite flat on the bridge. At the time of writing the case was going on favorably.

Dr. ST. CLAIR THOMSON (London): **Nasal Hydrorrhœa.**

The term Nasal Hydrorrhœa may still be preserved if it is used in a limited sense as defining an affection in which there is profuse watery discharge secreted by the nasal mucosa, and not dependent on intranasal or neighboring sources of irritation. The amount of the fluid may vary from what the patient would term a slight running, up to as much as a pint in the twenty-four hours. The clinical picture of nasal hydrorrhœa shades off in one direction into cases of what is generally called hay fever or paroxysmal rhinitis with symptoms of intense local irritation, while in the other direction they may consist of a passive and almost painless watery discharge from the nose. It appears to be an affection of adult life, occurring in both sexes; the flow usually takes place from both nostrils, though it may be more marked on one side than the other, and when handkerchiefs are soaked with it they generally dry stiff. It is most important to differentiate those cases in which the nasal watery flow is really an escape of cerebro-spinal fluid, and the discharge must be carefully examined in order to distinguish such from simple intranasal secretion.

Dr. CECIL E. SHAW (Belfast): **Case of Epithelioma of the Pharynx.**

Mrs. P., thirty-six years, was seen on May 19, 1897, complaining of difficulty in swallowing and a feeling of a lump in the throat. She was a well nourished woman. She had had no miscarriages, her family history was good. About March 1st of same year her throat began to feel sore, and at the end of April her voice became hoarse and she began to have difficulty in swallowing. At no time was there any pain. Examination revealed a dry and dirty pharynx; with the laryngeal mirror, a swelling about the size of a nut was seen on the posterior wall of the pharynx directly behind the epiglottis, which it touched; at this point the swelling was ulcerated. There were no enlarged glands. Antisyphilitic treatment was administered. The patient was not again seen by Dr. Shaw, but the history given was, that hemorrhage occurred from the growth, that she gradually became weaker, and that though no new symptoms developed she became comatose on July 9th and died.

Microscopic examination showed the growth to be an epithelioma; the age of the patient and the absence of pain were features of interest.

In the *discussion* which followed, Dr. McBride, Sir Felix Semon, and Dr. Milligan referred to the question of the presence or absence of pain in these cases. Either was possible. The cause of the pain, Sir Felix Semon thought, lay in the implication of the sensory nerves by the pathological process. The President, Dr. Dundas Grant, and Professor Urban Pritchard commented upon the importance of digital examination in such cases.

Dr. THOMAS BARR (Glasgow): **Notes on Extradural Suppuration in the Sigmoid Fossa Due to Ear Disease.**

Three cases were recorded in which a *firm wall of bone intervened between the middle-ear cavities and the abscess cavity.*

In the *first case*, after the opening and curetting of the mastoid antrum, pain continued, with repeated rigors, high temperatures, and remissions. There was no swelling or tenderness over the internal jugular vein. The sigmoid sinus was exposed by a second operation; after removing the sclerosed bone that lay behind the antrum, foetid pus and granulation tissue were found and the sinus covered with plastic exudation; the sinus being soft and elastic was not opened. The patient made a good recovery.

In the *second case*, there was a history of severe pain, and vomiting and one severe rigor after admission to hospital. Stacke's operation was performed. There was no tenderness or swelling over the internal jugular vein, but rigors continued, necessitating further operation. The bone was removed behind the antrum and the sigmoid groove was found to contain foetid pus, and further a quantity of granulation tissue was found between the bone and the dura, above and behind the sinus. This was curetted. The patient made an excellent recovery.

The *third case* belonged to the pre-operation period, and post-mortem showed a state of things almost identical with the above. With a history of chronic middle-ear suppuration, the patient was seized with great pain, followed by vomiting, rigors, coma, and death. There was found post-mortem a collection of foetid pus in contact with the inner surface of the mastoid process and posterior surface of the petrous bone on the left side. The walls of the lateral sinus were separated from the bone by the pus. There was no pus in the sinus. There was no meningitis or cerebritis.

*The points of interest were: the rigors and high temperature, with*



*an absence of pain, swelling, or cording of the internal jugular vein.* There was no evidence to show that the sinus was plugged, and in the two cases operated on recovery took place without opening the sigmoid sinus. By removing the septic matter covering the sinus further absorption was prevented. Where rigors and high temperature existed, the antrum should be opened and the dura mater exposed in one operation, or the second part of the operation should be performed very soon after the first if no decided improvement took place in the meanwhile. Such rigors and high temperature were not possible with an affection confined to the middle ear.

**Dr. THOMAS BARR (Glasgow): A Case of Double Acute Mastoid Empyema with Exposure of Dura Mater. Operation in Both.**

In this case, when the mastoid antrum was opened, the sigmoid sinus and neighboring dura mater were found already exposed, covered with granulation tissue and bathed in pus. The patient, an adult male, forty-six years, gave a history of ear suppuration of three weeks' standing. The temperature was normal and there were no rigors. Owing to the continued profuse discharge and pain on pressure over the mastoid antrum, the right ear was operated on and a large cavity containing pus and granulation tissue was opened into, while the sigmoid sinus and neighboring dura were found exposed on the back wall. After curetting, etc., healing and closure of the cavity followed. Three weeks later, the left ear was operated upon; a similar condition was found, but the sigmoid sinus was not exposed. Recovery took place.

Here there was an entire absence of rigors and high temperature. Notwithstanding the amount of local inflammatory mischief, no systemic infection had taken place. There was comparative absence of pain, though there was extensive otitis and destruction of tissue.

**Mr. HUGH E. JONES (Liverpool): Some Unmanageable Complications of Suppurative Middle-Ear Disease.**

The complications are described as unmanageable in a relative sense only; a successful result might have been obtained in some of the cases recorded in certain contingencies. The notes of seven fatal cases are recorded. The author's conclusions were that:

1. None of these cases had received treatment by a specialist for the ear affection.
2. In most of the cases serious delays occurred before surgical

treatment was sought. The first thrombosis case had an unopened mastoid abscess for two weeks before admission. The temporo-sphenoidal case had been seriously ill for four weeks before he was seen by the writer. The caries of the petrous case had swelling over the mastoid and in the neck three weeks before it was sent in for operation. The suppurative meningitis cases were sent in as soon as the complication manifested itself, but evidence of very serious ear mischief had been present for some weeks.

3. *Extension of the suppuration beyond the limit of successful operative treatment.* Whether this was due to the rapidity of the process or to avoidable delays in applying proper treatment, it was the cause of failure in the thrombosis cases, in the temporo-sphenoidal case, and in the cases of purulent meningitis.

4. *Failure to expose the fatal lesion.* This caused death in the cerebellar case, either by actually bursting the abscess without providing an exit for the pus, or by spontaneous bursting of the abscess after the operation. The occurrence of meningitis in the caries of the petrous case would possibly have been prevented by a most extensive and thorough exposure of the diseased area. Once a general suppurative meningitis has been set up all operations fail.

The moral seemed to be that the most important study of all in connection with this subject was the early detection of suppuration in the attic and antrum or internal ear, whether in chronic or acute suppurative otitis, and *more especially in the latter*, in which the mischief spreads with much greater rapidity.

In the *discussion* on the papers read by Dr. Barr and Mr. Jones it was stated by Dr. Dundas Grant that he was in favor of early opening of the mastoid with symptoms in acute middle-ear suppuration. His experience led him to reduce the interval to within a few days after paracentesis. If the symptoms recurred or there was the slightest evidence of acute inflammation of the mastoid, one should open at once, as the results were so satisfactory when the operation was performed at this stage.

Mr. T. MARK HOVELL (London): **Catheterization of the Eustachian Tubes.**

Mr. Hovell dwelt upon the absence of uniformity with regard to gauge and length of curve of the catheter as represented by a particular number, and also upon the variability in the length of its stem. At the present time there existed no nomenclature

which enabled one practitioner to tell another the precise gauge and curve of a catheter required for the treatment of a particular case. He submitted :

1. That the gauge of Eustachian catheters shall be that of the French catheter gauge, which is well known and graduated on a definite scale.

2. That the length of the curve shall be expressed in millimetres, the number indicating the distance which the curve separates two parallel straight lines. Thus when a catheter is placed so that the outer part of the stem touches the one line, and the tip of its beak the other line, the distance between the two lines shall indicate the curve in millimetres. As the beak of a catheter is usually slightly larger than the stem, the actual gauge of the latter will be a trifle less than the number specified. It was suggested that good work could be done by the general practitioner with the following three instruments :

No. 9 gauge, 18 millimetres curve.

No. 7 " 16 " "

No. 5 " 14 " "

In *discussing* Mr. Hovell's suggestion, the speakers agreed upon the utility of a uniform standard. [Dr. McBride and Dr. Walker Downie said that another line was necessary in the drawing of the scale which Mr. Hovell had submitted to them.]

**Mr. LENTHAL CHEATLE (London) : Specimen of Sarcoma of the Middle Ear.**

Specimen of the tumor with photographs was shown from a child two and a half years. On May 4, 1896, there was present a large, diffuse, fluctuating, painful swelling behind the left pinna. A tough, pedunculated polypus filled the external auditory meatus. There was a history of discharge from the ears for some months. The swelling was opened, and pus, granulations, and ulceration of bone were found ; there was a communication with the mastoid antrum. This condition was dealt with.

On August 17, 1896, the child was readmitted to hospital. At that date there was left facial paralysis, and behind the auricle there was a sessile, red, offensive, fungating mass, about the size of a small orange ; the tumor passed down into the upper region of the neck ; there was optic neuritis. The tumor grew rapidly and the patient died on October 19th. Post-mortem revealed the tumor involving the deep glands of the neck ; through an opening in the temporal bone, which involved the mastoid and lower

squamous regions and the roof of the middle ear, the growth spread into the middle fossa of the skull as a rounded, lobulated mass. Over the intracranial surface of the growth the dura mater was lost, and the overlying temporo-sphenoidal lobe was indented. The microscope showed that it consisted chiefly of small spindle cells.

**Dr. WILLIAM MILLIGAN (Manchester): Some Observations upon Antrectomy as a Means of Treatment in Suppurative Middle-Ear Disease.**

In acute suppurative conditions characterized by such general symptoms as high temperature, rapid pulse, headache, etc., there is a most important indication of pus within the mastoid cells, in the presence of local pain over the process, frequently most exquisite, and in the presence of an œdematous swelling of the postero-superior meatal wall—"the dip"—close to its attachment to the membrana tympani. The persistence of such general symptoms, in conjunction with severe local pain, dipping of the postero-superior meatal wall, and the presence of discharge, whether copious or not, should at once determine operative procedure.

Cases which may fairly be called subacute exist, which have run a course of a few months, in which the discharge is fairly free, and in which the sense of hearing is distinctly and progressively becoming worse, and in which, owing to the absence of all tension, pain is absent. Rational local treatment may be carried out for too long a period in such cases, and the resulting damage to the ear and hearing power becomes worse. So long as there is no pain, there is a tendency to discountenance any idea of operation, and to continue the local treatment for almost indefinite periods. To regard the presence of pain as a *sine qua non* to the performance of a mastoid operation is to do an injustice to the patient, because suppuration continues, and more and more disorganization of the middle ear results. To determine the presence of pus in the mastoid antrum or cells is often difficult. Experience has shown that, if the middle ear be cleansed first by syringing, secondly by free inflation with Politzer's bag, and if pus still reappears almost immediately after drying and redrying of the part, there must be a reservoir of secretion, not simply in the middle ear itself, but in the cavity of the mastoid antrum or cells. Operative experience has endorsed this view.

A point of some diagnostic value is the surface temperature of

the skin over the posterior meatal wall, close to its attachment to the membrane, in contrast to the surface temperature taken over a similar area upon the anterior meatal wall. In cases where pus is present in the mastoid cells, or where the mucous membrane lining these cells is in hyperæmic condition, the surface temperature of the posterior wall will be found slightly higher than that of the anterior. This, with the other facts mentioned, should point strongly to the conclusion that the tissues within the mastoid are in an unhealthy condition and require free exposure. An exploratory mastoid operation might be done more frequently and at an earlier date than is at present the custom. In the subacute variety such an exploratory operation is advisable. In chronic suppuration,—in cases which have run a course of perhaps a few years,—there is, as a rule, some bone lesion superadded. This may be recognized by inspection, or by palpation with the probe, but it may be situated in the depths of the mastoid antrum or cells. Should purely local treatment be countenanced for indefinite periods? In these cases there is an inherent element of danger, and serious intracranial trouble may suddenly supervene. The absence of pain has largely determined a non-operative course of treatment, and radical measures have frequently been delayed, until the supervention of pain has only been the immediate precursor of a fatal meningitis, etc.

If suppuration has persisted for twelve months, and if for at least three months careful and rational local treatment has been tried without avail, then the mastoid antrum and cells should be opened and cleared out, the operation being determined by the peculiarity of each individual case. If cases proved to be of tuberculous origin, early opening and drainage should be resorted to; where cholesteatomatous masses occupy the attic and antrum, an early and radical operation should be carried out, and a permanent mastoid fistula maintained.

Of 150 cases operated upon, and forming the basis for these remarks, 10 were acute, 10 were subacute, 102 were generally chronic, 18 were of tuberculous origin, and in 10 cholesteatomatous masses were present.

All the acute cases healed rapidly with recovery of hearing power. Of the subacute cases, 9 entirely recovered, the hearing power returning to practically the normal amount, and 1 was lost sight of. Of the chronic cases, 78 were operated upon by a modified Stacke, and 65 of these completely recovered, 1 died, and 12 were lost sight of.



In 72 cases the ordinary Schwartze operation was performed. Of these 47 recovered, 8 died, and 17 were lost sight of or were still under treatment.

The 18 tuberculous cases were at once submitted to operation : 9 recovered, 6 died, and in 3 the subsequent history was unknown ; 3 died from meningitis, 1 from tuberculous enteritis, and 2 from general marasmus.

Of the 10 cases with cholesteatoma : all recovered, 5 with a permanent mastoid fistula ; in 1 the cavity was allowed to granulate from the bottom, while in 4 Stacke's operation was performed.

**HAMILTON A. BALLANCE (Norwich) : A Case of Septic Thrombosis of the Lateral Sinus.**

A woman, aged twenty-four years, pregnant five months, was admitted to the hospital suffering from disease of the left tympanum and mastoid for many months. There had been no discharge from the ear until one week before admission. She had had repeated rigors, sickness, and headaches. There was double optic neuritis.

A complete mastoid operation was done, an extradural abscess opened, and a slough removed from the lateral sinus. The internal jugular vein was divided between two ligatures in the neck. Suppurative tonsillitis, jaundice, and two attacks of erysipelas also occurred. The patient completely recovered.

**DUNDAS GRANT, M.A., M.D., F.R.C.S. : Mechanical Vibration Applied to the Spine in the Treatment of Sclerosis of the Middle Ear.**

By means of an electric motor, vibration is applied to the spine between the shoulders for five minutes at a sitting. The patient is usually able to realize after one application whether benefit has occurred. Ten cases were related, in six of which more or less improvement in deafness and tinnitus resulted.

If improvement occurs at the first sitting the vibration is applied daily for one week, and is then diminished in frequency to the minimum necessary to maintain the effect. Dr. Grant believes that the beneficial action is due to an indirect massage of the stapedio-vestibular joint.

**PHYSIOLOGICAL SECTION OF THE BRITISH MEDICAL ASSOCIATION.**

**Dr. RUTHERFORD, Professor of Physiology, Edinburgh : On Tone-Sensation, with Special Reference to the Function of the Cochlea.**

After giving a short description of the structure of the cochlea, Professor Rutherford continued :

The sound wave in its phase of condensation passes through the foot-plate of the stapes into the scala tympani, and is transmitted through Reissner's membrane to the fluid of the cochlear canal and its contents, and through the basilar membrane to the fluid in the scala vestibuli and the membrane of the round window. All these parts oscillate back again in the rarefaction phase of the wave. It is admitted that the wave strikes Corti's organ in its whole length practically at the same moment, and there it is translated into that unknown form of molecular vibration termed a nerve impulse.

Our auditory sense can distinguish tones varying from 16 (double) vibrations to 60,000 per second. According to Helmholtz, Corti's pillars or the fibres of the basilar membrane will co-vibrate and transmit the excitation to the auditory nerve. The higher tones are taken up by the fibres of the first turn, the lower by those of the third, the fibres increasing in length gradually from the base near the fenestra ovalis to the apex, from about 0.2 mm to 0.3 mm.

In 1880, Rutherford, on account of the great difficulties which beset the *resonance theory* of Helmholtz, advanced the so-called *telephone theory* of hearing, in order better to understand the action of the cochlea. The telephone transforms sound vibrations, however complex, into electrical currents of corresponding frequency, amplitude, and wave-form, and these in turn are re-transformed into sound vibrations similar to those received. The cochlea, according to Rutherford, may not be the place where sound is analyzed, but the auditory centre. He mentions, to support his theory, especially the investigations of Hermann<sup>1</sup> on the production of differential tones. When two discordant tones are simultaneously produced, a beat is heard, and if the vibrational difference between the two primary tones is sufficiently great, the successive beats give rise to the sensation of a third tone whose pitch is the vibrational difference between the two primary tones ; for example, if the primary tones have respectively 440 and 528 double vibrations, viz., the notes a' and c<sup>2</sup>, the pitch of the beat-tone is 88 d. vibr., i. e., the tone F.

<sup>1</sup> Hermann, "Zur Theorie der Combinationstöne," *Pflüger's Arch.*, 1891, xlix., p. 499.

Hermann produced the two primary tones from two tuning-forks, with a third fork at rest but capable of consonating to the beat-tone if it had been produced objectively. The third fork remained unaffected, although the observer heard the beat-tone distinctly. He therefore concluded that if the beat-tone failed to excite a resonator outside the ear it could not affect any supposed resonator in the cochlea; consequently it must be a purely subjective phenomenon arising from the conflict of vibrations in the auditory centre. That experiment—which is fully confirmed—proves that the auditory nerve transmits to the sensorium vibrations of the same frequency as the sound waves, and that they produce in the auditory centre harmony or discord according to their relative numbers. Hermann's conclusion from these experiments is "that there is no alternative but to drop the Helmholtz theory of resonators in the ear, although so elegant."

Rutherford is not unaware that "his theory still leaves much that is in the highest degree obscure." He speaks of the value of the Galton whistle, of the pressure-pattern theory of A. Waller,<sup>1</sup> Baginsky's experiments on animals, and the pathological observations on man, by Stepanow, Gruber, Moos and Steinbrügge, Burnett, and Bezold. Regarding the investigations of Bezold he mentions only the earlier examinations of this author, not the recent so important ones with the continuous tone-series on deaf-mutes and patients with partial exfoliation of the cochlea in one ear.

H. K.

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<sup>1</sup> *Human Physiology*, third edition, 1896, p. 474.

## REPORT OF THE PROGRESS IN OTOTOLOGY FOR THE THIRD QUARTER OF THE YEAR 1898.

ARRANGED BY DR. A. HARTMANN.

Translated by Dr. ARNOLD H. KNAPP.

### ANATOMY OF THE EAR.

186. BROMAN, J. The development of the auditory ossicles in man. *Proceedings of Anatomical Society* at the XIIth Congress at Kiel from 17-20 August, 1898.

187. MORRIL, A. D. The innervation of the auditory epithelium of *Mustelus canis*. *Journal of Morphology*, vol. xxiv., No. 1.

188. GRUNERT, C. The origin of the fistula auris and auricularis congenita. *Arch. f. Ohrenheilk.*, vol. xlv., p. 10.

186. Malleus and incus are derivatives of the mandibular arch, while the stapes is developed entirely from the hyoid arch. The stapedia process sinks into the labyrinthine wall and the fenestra ovalis results by pressure-atrophy. Ossification of the stapes starts in the fœtus of 21 cm from a centre at the base. Ossification of the incus commences in the fœtus of 19 cm at the upper part of the long process. The malleus begins to ossify at about the same time; there is but one centre, situated in the neck.

KRAUSE.

187. MORRIL examined the nerve-terminals in the ampullæ of the shark's labyrinth with Ehrlich's methylene-blue. The filaments either end freely between the hair-cells, or they touch the lower end of those cells with a terminal head. A direct connection between the hair-cells and the nerve-filament could not be found.

KRAUSE.

### PHYSIOLOGY OF THE EAR.

189. VOHSSEN. On the sense of hearing. *Report of the Senckenberg Society in Frankfort-a.-M.*, 1898.

189. VOHSEN explains the very delicate and exactly differentiated auditory sense by the importance of its most important function, the interpretation of speech. He compares the hearing and speaking organs of the animal kingdom in a table, and shows that the degree of development of the hearing organ corresponds to the structure of the voice. The relations of the auditory organ to equilibration, the hearing power, and sound-conduction are discussed, together with experiments and Helmholtz's hypothesis. Finally, the importance of the examination of hearing, especially with the voice and the continuous tone-series, is dwelt upon.

BRÜHL.

GENERAL.

a.—REPORTS AND GENERAL COMMUNICATIONS.

190. GERBER, H. Contributions to rhino-laryngology and otology. *Monats. f. Ohrenheilk.*, No. 7, 1898.

191. EITELBERG, A. General examination of the patient. *Wiener medic. Presse*, No. 39, 1898.

190. GERBER reports one death among 458 anæsthesias in a scrofulous child with a weak heart. In the after-treatment of operations on the septum a modification of Winckler's splint, one in which the handle has been removed, is recommended. In 80 cases of opening of the maxillary antra, 1 was cured in four weeks, several in six months to a year, the majority after two or more years. Some have remained in treatment after four to five years. Gerber cannot agree with Kuhnt that the removal of the anterior wall of the frontal sinus is not followed by deformity.

In leukoplacia and the various ulcerations of the tongue, chromic acid is very serviceable.

Adenoid vegetations are removed in superficial narcosis with Juracz's forceps, Gottstein's curette, and Hartmann's curette in turn. Finally the naso-pharynx is examined with the finger. Several cases of otitis followed the operation.

As regards the chronic purulent otitides, Gerber favors the conservative treatment.

The etiology of ozæna is not always the same. Hereditary and dyscrasic influences, acute and chronic infectious diseases which cause an atrophy of the mucous membrane and the framework, and changes in the epithelium may act as causes. Diphtheria bacilli were always found in cases of rhinitis fibrinosa; in one case the infection of a second individual was proven. Rarer cases



included a tuberculoma of the lobule, four cases of rhino-scleroma, and some unusual tumors of the septum. Rhinoliths were usually composed of leptothrix and other bacteria. KILLIAN.

191. EITELBERG believes that the disposition to affections of the naso-pharynx leading to aural catarrh is inherited, and that individuals with narrow noses are most liable. POLLAK.

b.—METHODS OF EXAMINATION AND TREATMENT.

192. TREITEL. Hearing exercises and their value in deaf-mutes and the very deaf. *Klin. Vorträge*, vol. ii., 11, 1898.

193. OSTMANN. On massage of the ear, 2d part. The action of the massage apparatus on the normal sound-conveying part of the ear. *Arch. f. Ohrenheilk.*, vol. xlv., p. 39.

194. LÖHNBERG. An instrument for vibratory massage of the drum-membrane and of the nasal mucous membrane for the patient's own use. *Monatschr. f. Ohrenheilk.*, No. 8, 1898.

195. KYLE, D. BRADEN. The position of the orifice of the Eustachian tube and the possibility of catheterizing it through the mouth. *Philadelphia Med. Jour.*, Sept. 24, 1898.

196. SINGER, A. On the inhalation of sal-ammoniac. *Wiener med. Presse*, Nos. 38 and 39, 1898.

192. After an historical review of hearing exercises for deaf-mutes, Urbantschitsch's method is described, and to judge of its worth the following questions are put: 1. Is it possible to restore lost hearing or to improve hardness of hearing? 2. Do these exercises possess a practical value for the enunciation of deaf-mutes and further for the intercourse with those of normal hearing?

The answer to Question 1 is, No. Autopsies of deaf-mutes have shown irreparable conditions in the labyrinth, and examinations with tuning-forks could not detect an essential increase of hearing even in those deaf-mutes treated with hearing exercises. It is, however, possible with hearing exercises to increase the understanding of deaf-mutes from words to sentences—neglecting tactile sensations,—especially when psychical combination processes are present; a proof for this is a loss of the results with cessation of the hearing exercises. In the psychically deaf, hearing exercises may restore the hearing, and in children with late acquired deafness, hearing remnants may be preserved. They may be tried in adults with functional disturbance of hearing.

Question 2 is answered by stating that the enunciation is not

improved by hearing exercises, and the improved hearing is not sufficient to allow of conversation. The author therefore concludes (perhaps too hastily) that hearing exercises cannot be recommended as a part of the general exercise for deaf-mutes.

BRÜHL.

195. After giving an account of the use of the Eustachian catheter since the earliest times, KYLE refers to catheterization of the tube through the mouth, and gives cuts of several catheters devised for this purpose.

The catheter used for this purpose by the author is of coin silver, six inches in length, and very flexible, so that the curve can be altered at will to suit individual cases. Attached to the catheter is a small receptacle in which may be placed medicinal agents to be injected into the ear. The patient holds the tongue down with a tongue depressor while the surgeon locates the position of the tube with a mirror held in one hand, and with the other introduces the catheter behind the uvula. The author prefers this method to catheterization through the nose, for the following reasons: It is difficult and often impossible to pass the catheter through the nose, when there are deviation or spurs of the septum, thickening of the inferior turbinate bone, malformations, etc. The catheter can be introduced directly into the Eustachian orifice in an aseptic condition.

GORHAM BACON.

196. SINGER describes Urbantschitsch's modification of Kerr's inhaler. This apparatus has done good service in the hands of the reviewer.

POLLAK.

#### EXTERNAL EAR.

197. BRUYS. Herpetiform eruption on the auricle preceded by severe constitutional symptoms. *Bull. de la soc. belge d'ot., de lar.*, 1898.

198. COURTADE. Acquired and congenital occlusions of the auditory canal. *Ann. des mal. de l'or., du lar.*, xxiv., 7.

199. MCBRIDE, P., and TURNER, LOGAN. Tumors of the external auditory meatus. *Edinburgh Hospital Reports*, vol. v.

200. STANKOWSKI. Bilateral rupture of the drum-membrane. *Monatschrift f. Ohrenheilk.*, No. 8, 1898.

201. FINK, EMANUEL. On foreign bodies in the ear. *Deutsche med. Wochenschr.*, No. 27, 1898.

202. GANDIER, M. A foreign body wedged in the middle ear. *Bull. de la soc. belge d'ot., de lar.*, 1898.

197. A girl of thirteen was suddenly taken ill with violent constitutional symptoms, great pain over the mastoid, diminished hearing, but without fever; four days later an eruption of herpetiform vesicles appeared. The vesicles were situated in the area supplied by the auricular nerve, hence BRUYS believes it to have been a case of herpes zoster. ZIMMERMANN.

198. In one case, after the entrance of potash lye in the right ear, the auditory canal became completely occluded after three months without otorrhœa, but patient noticed that pus escaped into the pharynx. The cicatrix was divided and kept open with a drainage tube. There was an oval perforation in the drum-membrane.

The other three cases were not treated operatively. In two, the occlusion was the consequence of an inveterate otorrhœa. In the third, a man of twenty-nine, there was a congenital defect of the auricle with rudimentary ridges under the skin, and a blind duct 4 mm deep which from time to time discharged plug-like masses. ZIMMERMANN.

199. CASE 1. A warty sessile mass growing from the skin covering the upper and back part of the cartilaginous meatus, bleeding readily when touched with the probe. Microscopical sections showed it to be a simple papilloma. In a man aged twenty-nine years.

CASE 2. On the posterior aspect of the tragus, and attached to its inner half, was a small tumor about the size of a bean, covered by the hairy skin and filling up the lower half of the auditory meatus, slightly pedunculated, and of firm consistence. Microscopic sections showed mainly bundles of fibrous tissue with the cells lying between, and blood-vessels scattered here and there. Numerous sebaceous glands considerably in excess of the normal were also seen, the whole being covered by a thin layer of epithelium. In a woman aged twenty-nine years.

ARTHUR CHEATLE.

200. Report of three cases of bilateral rupture of the drum-membrane: one the result of explosion of the water-level of a boiler; the others following boxes on the ears. The literature of the subject is reviewed. KILLIAN.

201. A farmer, twenty-eight years of age, carried a completely occluding pea in his ear-canal for twenty-one years. After extraction of the pea, a fairly well-preserved cockroach was found in the depth of the canal. *Mt* normal.

The second patient has suffered from an old otorrhœa and recently from pain in the ear. Twenty maggots, each 1 cm long, were extracted. Some of these worms had found their way into the patient's throat and were then expectorated.

NOLTENIUS.

202. The foreign body, a hook from a lace boot, had been forced into the tympanum by two surgeons during attempts at extraction, and caused a large abscess, facial paralysis, and mastoid empyema. The foreign body was detected by means of the X-rays, and at the operation was found lodged in the aditus. Recovery.

ZIMMERMANN.

#### MIDDLE EAR.

##### a.—ACUTE OTITIS MEDIA.

203. PONTIÈRE. Facial paralysis during an acute otitis media. Recovery. *Ann. des mal. de l'or., du lar.*, xxiv., 8.

204. CHEATHAM, WILLIAM. Some of the special germs in inflammation of the middle ear, with an interesting case. *New York Medical Record*, Oct. 1, 1898.

205. SPRAGUE, FRANK B. Remarks on some dangers attending an acute suppuration of the middle ear, with three illustrative cases. *Atlantic Med. Weekly*, July 30, 1898.

206. HEERMANN, G. On otitis media in early childhood (otitis comitans). K. Marhold, Halle, 1898.

203. This is a good example of the rare occurrence of facial paralysis in the course of acute otitis. The paresis disappeared in a week, hence it was probably caused by compression from an exudate and not a neuritis. As regards the crooked position of the uvula, PONTIÈRE shares the opinion of Lermoyez that the soft palate is not innervated by the facial. ZIMMERMANN.

204. The case was one of acute suppurative inflammation of both middle ears, resulting in attic disease on the left side. The pus burrowed through externally about on a level with the superior edge of the external auditory canal posteriorly. A free incision was made and drainage established. The patient recovered. The point of interest was the presence of a pure culture of the diplococcus of Weichselbaum. The disease started as an acute tonsillitis in which there was also a pure culture of this diplococcus. GORHAM BACON.

205. The first case reported was that of a male, aged forty-two,

who had an acute purulent otitis media followed by caries of the mastoid, cervical abscess, and septicæmia. Duration of illness three months. Recovery.

CASE 2. Male, aged twenty-seven, had severe inflammation of the right ear followed by a free discharge. There developed infective thrombosis of the right sigmoid sinus, an extradural abscess, and multiple metastatic abscesses, and pyæmia. An operation was performed, but death followed eighteen days later.

The third case was that of a male, seventy-four years of age, who had an extradural abscess, necrosis of the entire mastoid portion of the temporal bone, due to an acute purulent otitis media. Illness of two weeks' duration. An operation was performed which was followed by recovery. GORHAM BACON.

206. After reviewing the papers which have appeared on this subject, HEERMANN describes nine autopsies of children who had not previously been examined. He concludes as follows:

1. Otitis media in early childhood develops with a severe general diseased condition as an otitis comitans.

2. It is to be regarded as a complication of the general disease, causing no symptoms nor influencing the course of the general sickness.

3. Its bacteria are to be found in the normal Eustachian tube and middle ear. The weakened constitution gives the necessary nidus to their growth.

4. In certain cases this otitis comitans appears as a severe complication and cannot be distinguished from the genuine otitis media.

5. The otitis comitans requires no treatment, unless acute symptoms supervene, which are then to be treated like the usual otitis.

6. In the treatment of this severer form, as in the genuine otitis, irrigation of the ear-canal is by no means permissible.

H.

#### b.—CHRONIC OTITIS MEDIA.

207. KREBS. The indications for the radical operation of chronic purulent otitis. *Monatschr. f. Ohrenheilk.*, No. 9, 1898.

208. PRITCHARD, URBAN. Changes in the stapes and incus joint due to chronic middle-ear suppuration. *King's College Hospital Reports*, 1897.

209. BOTEY, R. Three cases of attico-antrectomy with a simplified plastic procedure. *Arch. f. Ohrenhkl.*, vol. xlv., p. 68.



210. LOMBARD. The electric borer and drill in mastoid operations. *Ann. des mal. de l'or., du lar.*, vol. xxiv., 9.

207. To determine whether the pus comes from the attic or the antrum in cases of chronic otorrhœa, KREBS employs gauze packing after thorough cleansing. On the following day the gauze is removed, and it is carefully noted whether the new pus comes from the front or the back. Occasionally the pus comes from both places. Without a radical operation those cases are healed by simple curetting where the antrum is easily accessible from the auditory canal. KILLIAN.

208. Some pen-and-ink sketches are given, showing partial forward dislocation of the articular process of the incus, total forward dislocation, partial and complete destruction of the articular process, and an adhesion which is not uncommonly seen passing from the head of the stapes in an upward direction, in cases of loss of the descending articular process; this adhesion being probably the cicatricial remains of the lining membrane which surrounds the joint.

The sketches are taken from patients who had been attending Professor PRITCHARD'S clinic during the year.

ARTHUR CHEATLE.

210. LOMBARD describes a case of cholesteatoma where he had employed the electric drill with great advantage.

ZIMMERMANN.

C.—CEREBRAL COMPLICATIONS OF CHRONIC PURULENT OTITIS.

211. ROPER, H. J., and LITTLEWOOD, H. A case of temporo-sphenoidal abscess. Trephining. Recovery. *Lancet*, Sept. 24, 1898.

212. BRONNER, ADOLPH. Notes on a case of purulent cerebral meningitis of aural origin with peculiar symptoms. *Lancet*, July 23, 1898.

213. JAKINS, P. Otitic cerebellar abscess. Recovery. *Medical Press and Circular*, Aug. 10, 1898.

214. PARSONS, FRANK S. A case of acute mastoiditis with lobar pneumonia followed by lateral sinus thrombosis and pyæmia. Recovery without operation. *Atlantic Med. Weekly*, Sept. 24, 1898.

215. CROUCH, J. FRANK. Report of a case of double mastoid abscess with openings into the cranial cavities. *Journal of Eye, Ear, and Throat Diseases*, July, 1898.

216. DENCH, E. B. Thrombosis of the lateral sinus dependent upon suppurative otitis media, with report of cases. *The Laryngoscope*, Aug., 1898.

217. COLLINS, B. C. A case of otitis media purulenta acuta (double) with mastoiditis on left side following removal of adenoids. *The Laryngoscope*, Aug., 1898.

218. RUMBOLD, FRANK M. Mastoiditis of dental origin in a diabetic, with an unusual formation of the mastoid cells. Operation. Recovery. *The Laryngoscope*, Aug., 1898.

219. DELSTANCHE, JR. A case of intradural abscess following an acute otitis media purulenta. *Bull. de la soc. belge d'ot., de lar.*, 1898.

220. HENNEBERT and ROUSSEAUX. Otitic pyæmia after phlebitis of the sigmoid sinus and of the jugular vein. *Bull. de la soc. belge d'ot., de lar.*, 1898.

211. A girl, aged fourteen years, came to ROPER with a history of discharge from the left ear for 2 years. Typical symptoms of a temporo-sphenoidal abscess developed. Complete recovery after operation by LITTLEWOOD. ARTHUR CHEATLE.

212. At the post-mortem examination of a boy, aged sixteen years, who was under BRONNER's care for cerebral trouble resulting from chronic middle-ear suppuration from the left ear, the following conditions were found: Convolutions on both sides, covered with thick gelatinous pus, which involved the base, as far back as the apex of the interpeduncular space, including the sheaths of the first to sixth nerves. A small subpial abscess the size of a marble communicated with the subdural collection of pus, and implicated the outer and inner aspects of the left frontal lobe, just anterior to the tip of the temporo-sphenoidal lobe. Points of interest were: that the pus was on both sides of the brain; during life the pulse was slow at the beginning, only once or twice reaching 80 per minute; no restlessness or irritability until a few days before death; no vomiting; and the presence of aphasia.

ARTHUR CHEATLE.

213. At a meeting of the British Laryngological Society held July 22, 1898, JAKINS records a case of recovery from cerebellar abscess. CHEATLE.

214. The case was that of a boy, seven and one half years of age, of a delicate constitution, and who was subject to frequent attacks of tonsillitis. He also had adenoids. When seen by the

writer, he had a suppurative inflammation of the left ear due to an attack of tonsillitis. A few days later the boy had a chill, followed by a temperature of  $104^{\circ}$ , pulse 130, respirations 40. Diagnosis was then made of lobar pneumonia, right side. The patient subsequently had another chill, and at this time had well marked symptoms of mastoid disease on the right side, with evidences of sinus thrombosis. This state of affairs was followed by pyæmic symptoms. The mother was opposed to an operation which was advised. The boy ultimately recovered.

GORHAM BACON.

215. The patient, a male, ten weeks previously had a severe inflammation of the throat and nose, followed by suppurative inflammation of both middle ears. Later there was mastoid disease affecting the right side. The mastoid cells were opened and found full of pus, and the sinus exposed. This was followed by a mastoid abscess on the left side; on opening the mastoid cells, a carious opening was found in the tympanic roof, leading to the middle cerebral fossa.

GORHAM BACON.

216. The writer draws the following conclusions:

1. A complete and prompt mastoid operation in every case. This means the removal of softened bone, no matter what structures may be exposed during the operation.
2. The early surgical intervention in all cases of sinus thrombosis, whether discovered during the mastoid operation, or recognized by constitutional symptoms.
3. That the advisability of interference with the internal jugular vein depends upon the presence of symptoms indicative of jugular thrombosis in every particular case.

GORHAM BACON.

217. The child was two years old, and the same night after the operation of excision of the adenoids, had earache. In the morning both ears were discharging, although previously the child had had no aural disease. In the left ear the mastoid became involved and an operation was necessary. GORHAM BACON.

218. The case in question was that of a man sixty-seven years of age. Ever since eighth year of age, he had had a chronic otorrhœa of one side. He had also had diabetes mellitus for several years. He developed mastoid disease as a result of sea-bathing. He had been suffering with his teeth for a year. The few teeth he had were affected with Rigg's disease. Several teeth were extracted, and the mastoid was opened and found

sclerotic. The patient continued to have severe pain until several more teeth were extracted, when an abscess was found at the root of the molar tooth, and osteophytes on the root of the canine.

The writer reports the case to show the apparent connection between the dental and mastoid disease. Also that the diabetic condition had no apparent influence upon the cause of the trouble, and did not seem to affect in the least the repair of the surgical injury.

GORHAM BACON.

219. A boy of fourteen, with old-standing otorrhœa, suffered from mastoiditis. At the third operation, the exposed dura was incised, one half-liter of pus was evacuated, and the severe meningeal symptoms were relieved.

ZIMMERMANN.

220. The case of a man, twenty-two years old, where an operation was considered out of the question because of hemophilia; after one month the patient recovered. The first chill occurred 3 weeks after the otitis, and returned daily for 5 evenings; the jugular vein could be felt as a hard, painful cord.

ZIMMERMANN.

d.—OTHER AFFECTIONS OF THE MIDDLE EAR.

221. ESCHWEILER. A case of fibromyxoma of the mastoid process. *Arch. f. Ohrenhkl.*, vol. xlv., p. 18.

222. MCBRIDE, P., and TURNER, LOGAN. Hairy polypus in the left middle ear. *Edinburgh Hospital Reports*, 1898.

223. GRANT, DUNDAS. Chronic dry catarrh of the middle ear. *Med. Press*, July 27, 1898.

224. PRITCHARD, URBAN. Fracture of the handle of the malleus due to indirect violence. *King's College Hospital Reports*, 1897.

221. The growth occupied a cavity 2.5 by 5.5 cm in the mastoid process in a patient suffering from otorrhœa on that side since childhood. The tumor was exposed by removing the corticalis, which it had at one place perforated, where the epidermis had travelled in and partly lined the cavity.

BLOCH.

222. A child, aged seven years, had suffered with chronic suppuration from the left ear for one year. A fortnight before examination the mother noticed a long black hair protruding from the ear; on attempting to pull it out she broke it. While removing the left malleus under chloroform, it was found possible to cut away a small piece of skin which was attached to the wall

of the tympanic cavity ; springing from this piece of skin were two black twisted hairs, one of which measured 4 inches in length when uncoiled, the other  $1\frac{3}{4}$  inches, probably the remnant of the hair which the mother had broken. The piece of skin to which the hairs were attached was so fragmentary that it was found impossible to preserve it for microscopic examination.

Fifteen months after the operation there was no evidence of hairs, although, as the ear had been neglected, the discharge still continued. The authors refer to two cases of recurrent hairy polypi growing from the middle ear recorded by Weydener and Scheibe in these ARCHIVES (vol. xxiv., p. 272) ; in these cases hair follicles were present.

These cases are interesting in showing that dermoids are occasionally met with in connection with the middle ear. Unfortunately McBRIDE and TURNER do not state the precise position of the hair-bearing skin present in their case ; one would expect the neighborhood of Shrapnell's membrane to be the site in which dermoids would be likely to exist.

CHEATLE.

223. As some patients suffering with sclerosis say they have noticed improvement in hearing power and subjective noises after riding on a bicycle or in a vibrating vehicle, GRANT has been applying to the dorsal spine a vibrating instrument, made after the style of the mechanism employed in Gille de la Tourette's helmet, as a means of treatment. He promises to publish results.

CHEATLE.

224. A man, aged forty-four, was sent from the surgical wards to Professor PRITCHARD's clinic, on account of slight deafness in the left ear, resulting from a fracture of the base of the skull. On examination the membrane was found completely healed, but the handle of the malleus was seen to be separated from the short process by a distinct interval, being displaced backwards. By means of a Siegle's speculum, independent mobility could be plainly made out. The hearing power was not seriously interfered with, the patient only complaining of a stuffy feeling. The internal ear was intact.

CHEATLE.

#### NERVOUS APPARATUS.

225. PHROTIADIS and GABRIELIDES. A case of deafness with disturbance of equilibrium and pulsating exophthalmos following a fracture at the base of the skull. *Ann. des mal. de l'or., du lar.*, xxiv., 8.



226. DRUAULT. Sarcoma of the internal auditory meatus. *Ann. des mal. de l'or., du lar.*, xxiv., 8.

227. HAMMERSCHLAG. A case of multiple cranial nerve affection. *Arch. f. Ohrenheilk.*, vol. xlv., p. 1.

228. MÜLLER, R. The diagnosis of traumatic affections of the internal ear. *Deutsche med. Wochenschr.*, No. 31, 1898.

229. LERNER, A. On tabic deafness. *Klin. therap. Wochenschr.*, Nos. 29 and 38, 1898.

230. PRITCHARD, URBAN. Unusual onset of congenital syphilitic internal-ear deafness. *King's College Hospital Reports*, 1897.

231. GRANT, DUNDAS. Alcoholic auditory neuritis. *Med. Press and Circular*, Aug. 10, 1898.

225. A man, twenty-six years old, after a fall on the left temple, suffered with hemorrhage from the left ear, epistaxis, vertigo, deafness, and left-sided pulsating exophthalmos. Examination three years later showed total deafness for loud voice, vertigo on closing the eyes, slight ataxia, very intense tinnitus, which disappeared on galvanization, and was considered to be due to a hyperæsthesia of the auditory nerve.

ZIMMERMANN.

226. A girl of seventeen has suffered with right facial paralysis, deafness, and headache for six years; vomiting, incomplete right hemiplegia with anæsthesia of the same side, and double optic neuritis appeared; no aphasia, but a certain hesitancy in speech was present. Antisyphilitic treatment was of no avail. A tumor in the left hemisphere was suspected and the skull was trephined and the lateral ventricle punctured. No result. Death six weeks later. At autopsy a cystic tumor 5 cm in diameter was found under the tentorium, resting upon the cerebellum, originating from the opening of the internal auditory meatus and attached to the meninges and the two nerves. It showed the structure of a spindle-celled sarcoma. The slow development (6½ years) is noticeable.

ZIMMERMANN.

227. The patient was suddenly taken ill with fever, facial paralysis, disturbances in the first and second branch of the fifth nerve, deafness, and auricular herpes zoster. Nystagmus, vertigo, nausea, and vomiting were present. It was supposed to be a disease of the various nerve trunks.

BLOCH.

228. MÜLLER examined thirty cases of injury and found in

about half the cases a chronic hyperæmic condition in the depth of the ear-canal and the drum-membrane. This condition is to be separated from inflammatory conditions, and is characteristic for the results of trauma involving the head and may lead to deafness, subjective noises, vertigo, and headache.

NOLTENIUS.

229. The tabic disease of the auditory nerve begins with tinnitus, vertigo, nausea, pain in the ear, and hyperacusis; of these tinnitus is most constant. Later hearing is affected and may be lost entirely. Ménière's symptom and pains may be present even when deafness exists. By the use of the weak galvanic current tinnitus was somewhat relieved. No improvement in hearing.

POLLAK.

230. A boy, aged eleven years, was brought to Professor PRITCHARD's clinic on account of gradual deafness, with attacks of giddiness and staggering gait. The symptoms were those of chronic Ménière's disease. Keratitis supervened ten months after the onset of the aural symptoms.

CHEATLE.

231. An alcoholic, suffering with internal-ear deafness with pronounced anæsthesia of the feet and front of legs, received great improvement from the administration of strychnia and abstention from alcohol.

CHEATLE.

#### NOSE AND NASO-PHARYNX.

##### a.—ANATOMY.

232. NEUMAYER, L. On the histology of the nasal mucous membrane. *Sitzungsbericht der Gesellschaft f. Morphologie, etc.*, München, vol. xiv., No. 152.

232. The respiratory epithelium contains numerous goblet cells. The glands of the lower two conchæ are of the mixed variety, mucous glands with crescents. Bowman's glands in the olfactory region secrete a mucous and serous fluid. KRAUSE.

##### b.—GENERAL SYMPTOMATOLOGY AND PATHOLOGY.

233. MALATO. The pathogenic micro-organisms of the physiological nasal cavity and the attenuating power of the nasal mucous membrane. *Arch. ital. di Otolog.*, etc., p. 345, 1897.

234. LEVY, ROBERT. Serious consequences following intra-nasal operations. *Laryngoscope*, Sept., 1898.

233. According to MALATO, pathogenic bacteria are almost

constant in the anterior part of the nose. They rapidly become attenuated and disappear. The nasal mucous membrane has no distinctive action upon them; the epithelium prevents the development of the spores. If in disease of the mucous membrane the same pathogenic micro-organisms are found, it is because the epithelium is no longer in a physiological condition.

GRADENIGO.

234. CASE 1. Male, æt. thirty, suffered from rheumatism and morphinism, which had been discontinued, and cardiac attacks due to excessive use of tobacco. Nasal obstruction and epistaxis from cartilaginous spur and septal deviation to the left side, with erosion, led to removal of the spur. An Asch operation was then easily performed under cocaine. Extreme carelessness of patient after operation by constant picking of nose, removal of tube, and failure to report for a week led to perforation of septum. Septicæmia, with depression, headache, pain in knee-joints, 103° F., 120 pulse, set in, followed by mitral regurgitation, slight paralysis of right leg, deliria, increase of all deep reflexes, with final and complete motor and sensory paralysis of right side. Death ensued in three days. Autopsy: Left optic thalamus and posterior part of internal capsule softened and broken down. Arteritis and plugging at first bifurcation of posterior cerebral artery. Old adhesion of left pleura, endocarditis, universal pericarditis, with adhesions. Spleen and liver large and soft with many infarcts. Hemorrhagic infarcts about smaller arteries of knee-joints.

CASE 2. Female, æt. twenty-five, with family history of phthisis pulmonum, had suppuration of both ears; influenza in 1893 and 1894. In April, 1894, cottonwood fever (like hay fever) until June. She had hypertrophic rhinitis with large exostoses adherent to outer wall. Right exostosis removed without accident. Ten days after removal of left exostosis patient died from cerebral meningitis. No autopsy.

In conclusion, LEVY carefully reviews the literature upon accidents following intranasal surgery and appends a complete bibliography.

M. TOEPLITZ.

#### c.—METHODS OF EXAMINATION AND TREATMENT.

235. GRADENIGO. On nasal surgery, especially in its relation to disease of the ear. *Arch. ital. di Otol.*, etc., 1897, p. 408.

236. FINK. When is the use of the galvano-cautery indicated in the nose? *Wien. med. Presse*, Nos. 33 and 34, 1898.

237. HECHT, H. The treatment of turbinate hypertrophy. *Arch. f. Laryngol.*, vii.

238. HAMM. The submucous treatment of hypertrophic rhinitis. *Monatschr. f. Ohrenheilk.*, No. 8, 1898.

235. GRADENIGO prefers the bloody operations in the nose as against the bloodless methods of galvano-caustic and electrolysis. The objections to the latter are as follows: the difficulty of exactly limiting the operation, insufficient action, causation of a wound with necrotic tissue, ready infection of the wound. It is irrational to destroy tissue which may be removed easily. The total removal of the middle or lower turbinates is rarely indicated; careful asepsis is necessary.

GRADENIGO.

236. FINK is in general opposed to the use of the galvano-cautery in the nose except in cases of marked primary hypertrophy of the turbinate. He is in the habit of drawing deep furrows in the tissue and removes the intervening membrane with a snare.

POLLAK.

237. HECHT advocates the use of trichloracetic acid in substance. He applies this remedy to posterior hypertrophies with two protected carriers, one applied through the nose and the other through the naso-pharynx.

ZARNIKO.

238. HAMM has had good results with the submucous injection of  $\frac{1}{2}$  gr. of a 10 per cent. zinc chloride solution in chronic swelling of the lower concha.

KILLIAN.

d.—OZÆNA.

239. DE SIMONI. The bacteria of ozæna. *Arch. ital. di Otol.*, etc., vol. i., p. 305, 1897.

240. FRANKENBERGER, O. The serum therapy in ozæna. *Klin. therap. Wochenschr.*, Nos. 39 and 40, 1898.

239. DE SIMONI examined bacteriologically 12 cases of ozæna and found the bacillus mucosus, the pseudo-diphtheria bacillus, Fränkel's diplococcus, and the staphylococcus pyogenes present. Fränkel's diplococcus proved to be very virulent. Attempts at inoculation of normal noses with pure cultures were negative. Hence it is probable that besides the bacteria a predisposition must be present.

GRADENIGO.

240. FRANKENBERGER inoculated 3 cases of ozæna with serum. He believes that the trouble was ameliorated, but that a cure is

impossible. He obtained the same effect with injecting salt solution, and concludes that ozæna is a tropho-neurosis and not a parasitic disease.

POLLAK.

c.—SEPTUM.

241. ESCAT. A simple method of resecting the deflected nasal cartilage without perforation. *Arch. intern. d'otol., de lar.*, xi., 4.

242. DOUGLASS, BEAMAN. The restoration of a deflected nasal septum. *N. Y. Med. Jour.*, Aug. 6, 1898.

241. Both sides of the septum are cocaineized. A submucous injection of about 3 ccm of distilled water is made on the concave side of the deflection; the convex prominence is cut away with a quick stroke of the knife. Packing. A perforation is thus avoided; the raw surface granulates rapidly and forms a firm membranous septum. The difficulty consists in injecting between mucous membrane and cartilage, and to prevent the injected fluid from running off. In ESCAT's 5 cases 4 were successes; in the fifth case, owing to previous operations, the mucous membrane could not be detached and a perforation resulted. ZIMMERMANN.

242. DOUGLASS divides the cases of deflected septum into: 1. Deflected cartilaginous septum with (a) bowing, (b) ridged, (c) sigmoid deformity; or (d) complicated with turbinal enlargement of the free side, exostoses, ecchondroses, or dislocation from the superior maxillary ridge. 2. Deflected cartilage and osseous septum. 3. Deflected cartilage with external deformity. 4. Deflected cartilage with high osseous palate. 5. Deflected cartilage with perforations from traumatism, ulceration, or abscess.

Douglass removes exostoses, ecchondroses, or pathological conditions of the turbinated tissues prior to the operation for deflected septum. In the latter, the septum is perforated at the most posterior part of the deflection with the spear knife, and into this incision,  $\frac{3}{4}$  inch long, a blunt-pointed bistoury is introduced and drawn forward, cutting all the ridges lengthwise. In case of dislocation of the cartilage from the superior maxillary ridge, the same incision is made along the dislocation. Ordinary displacements of both the bony ridge and cartilage are straightened with Adams's forceps. Adhesions are then broken up, the fragments pushed to the unobstructed side with the finger, and non-perforated splints of vulcanized rubber, flat on septal and concave on turbinal side, with straight lower border, are introduced.

M. TOEPLITZ.



f.—TUMORS OF THE NOSE.

243. EICHLER. Adenoma resembling a septal polyp. *Arch. f. Laryngol.*, vii.

244. OKADA, W. The pathology of the so-called mucous polyps of the nose, with remarks on the staining of mucus. *Arch. f. Laryngol.*, vii.

245. MACKENZIE, G. HUNTER. A case of malignant polypus of the nose, with remarks. *British Med. Jour.*, July 9, 1898.

246. LOEB, HANAU W. Rhino-pharyngeal fibroma. *Annals of Otol. and Rhinol.*, etc., May, 1898.

247. THORNER, MAX. Adeno-carcinoma of the nose. *Med. Record*, Sept. 24, 1898.

243. A tumor of the size of a bean situated near the tuberculum septi was removed with the cold snare. Microscopically the tumor was entirely composed of glandular convolutions.

ZARNIKO.

244. OKADA regards mucous polyps as inflammatory new growths. The superficial epithelium is in partial or complete mucoid metamorphosis. The glandular elements are usually increased in number, and generally mucous in type, rarely serous; the acini are dilated. The stroma consists of alveolar, more or less loose connective tissue containing round cells and serum albumin, but never mucus.

ZARNIKO.

245. A lady aged about sixty years was first seen by MACKENZIE on Sept. 23, 1897; three months previously profuse hemorrhage had occurred from the left nostril, and three or four recurrences of the bleeding had taken place since then. On examination both nostrils were occupied by polypi. On the right side they appeared of a simple character. On the left they were numerous, and completely filled the cavity; their color was mostly dark brown, but at places slaty gray resembling simple polypi; free bleeding occurred on gentle probing. The individual polyp could be differentiated, but distinct pedicles could not be made out. No pain was present, and there was no glandular enlargement.

On attempting removal with cold or hot snare, there was considerable bleeding. December, 1897, the growths appeared as a dense, black, sloughy mass, bleeding freely and frequently, and which gradually extended into the right nostril, left antrum, and mouth, causing marked bulging of the cheek and closing the eye. There was a continuous foetid, sanguineo-purulent discharge, and

slight variable pyrexia during the last two months of life, death taking place on February 12, 1898.

Microscopical examinations in the later stages showed it to be a round-celled sarcoma of great vascularity. In the earlier stages microscopical examination indicated simple mucous polypi, on two occasions. Mackenzie is inclined to think that the hemorrhage is the most reliable test of malignancy in these cases; and that sessile polypoid septal growths, or blood-stained or hemorrhagic spots or areas on the surfaces of what appear to be ordinary simple polypi, along with frequent and profuse bleedings, are almost conclusive proof of malignancy.

ARTHUR CHEATLE.

246. LOEB reports a case of naso-pharyngeal tumor of a girl aged thirteen, which rapidly developed from the fornix pharyngis, extending with two projections into both nostrils, which were completely filled. Microscopic examination ascertained a cyst-adenoma fibromatosum vasculosum. The growth, removed by galvano-cautery snare, did not recur.

M. TOEPLITZ.

247. THORNER reports the case of a farmer, aged forty-seven, with obstruction in the left nasal cavity, due to a growth extending from the vestibule to the Eustachian tube. Microscopical examination showed it to be a typical adenoma. After repeated thorough removals, recurrence took place; but a radical operation was declined. Later examinations revealed a change of the adenoma into epithelioma. The tumor finally extended to the right side, the left orbit was infiltrated, swallowing became difficult, hearing in left ear destroyed. No autopsy. The development of the tumor consumed two years. A bibliography is appended to the paper.

M. TOEPLITZ.

#### g.—ACCESSORY SINUSES.

248. BOULAY. Empyema of a maxillary antrum with diverticula and partitions. *Arch. intern. de laryng., d'otol.*, xi., 4.

249. POSTHUMUS, M. A case of pneumatocele of the frontal sinus. *Bull. de la soc. belge d'ot., de lar.*, 1898.

248. In a case with all symptoms of antral empyema, puncture through the second premolar showed no pus. On aspiration a very minute quantity appeared to come from a fistulous tract at the inner end of the canal and passed back and out, below a vertical partition into a cavity corresponding to the zygomatic ridge. The opening was enlarged and irrigations were kept up for eight

months, when the fluid returned clear. This was probably a primarily accessory division of the maxillary cavity.

The other case was a man of almost forty who complained of a prominence of the hard palate and pus discharging into the nasopharynx. Puncture from the lower meatus was unsuccessful. A collection of pus was shut off from the antrum by an oblique partition wall.

ZIMMERMANN.

249. A man, eighteen years of age, had had an ethmoid empyema, and now complained of a swelling over the right eye and headache which reacted favorably to iodide of potash. Transillumination negative. The frontal sinus was opened, the bone was very thin and the cavity very large, lined with normal mucous membrane. The author believes this to be a case of pneumatocele, the result of a temporary closure of the duct.

ZIMMERMANN.

#### h.—OTHER NASAL AFFECTIONS.

250. LERMOYEZ. Acute rhinitis. *Traité des maladies de l'enfance*, vol. iii.

251. DREYFUSS. Hemorrhage from the upper air passages in hepatic cirrhosis. *Munch. med. Woch.*, No. 32, 1898.

252. SPIES, G. The etiology of certain reflex neuroses. *Arch. f. Laryng.*, vii.

253. LICHTWITZ. Acute osteomyelitis of the superior maxilla simulating an empyema of the antrum. *Arch. f. Laryng.*, vii.

254. BAUMGARTEN. Bony occlusion of the choanæ. *Monatschr. f. Ohrenheilk.*, No. 9, 1898.

255. CASSELBERRY, W. E. A case of nasal fibroma. *Annals of Otology*, May, 1898.

256. POOLE, WM. H. Rhinolith. *N. Y. Med. Journ.*, July 9, 1898.

257. REARDON, TIMOTHY J. Fracture of the nose complicated by a rhinolith. *Boston Med. and Surg. Journ.*, July 28, 1898.

250. LERMOYEZ, divides rhinitis as follows:

1. Acute rhinitis: *a*, of the child; *b*, of the infant.
2. Acute suppurative rhinitis: *a*, of the child; *b*, of the infant.
3. Pseudo-membranous rhinitis (spasmodique).
4. Vasomotor rhinitis.

The acute rhinitis, though harmless in children, may be dangerous to the infant on account of asphyxia and inanition. The

treatment consists in the air-douche and menthol, calomel internally. Acute suppurative rhinitis occurs in children between seven and twelve, often accompanied by impetigo, and is caused by the staphylococci. New-born are infected during birth, usually gonorrhoeic in nature, begins on first or second day with bloody discharge. Pseudo-membranous rhinitis appears as a form of diphtheria, or milder without hemorrhages as rhinitis fibrinosa. The vasomotor rhinitis appears in the spring and autumn as hay fever, or irregularly with eye symptoms or bronchial with asthmatic attacks.

252. Sneezing, vasomotor coryza, hay fever, nasal asthma, are always produced by the contact of two opposite mucous membranes. If the contact is interrupted these neuroses should disappear. A favorite spot is the tuberculum septi, rarely the lower concha. The views of the author on this subject are perhaps a little too sanguine.

ZARNIKO.

253. A patient, twenty-nine years of age, had an osteomyelitis in the left canine fossa after an injury which led to the sequestration of the entire alveolar process. Pus emptied into the lower meatus through a fistula, but puncture showed that the maxillary antrum was not affected.

ZARNIKO.

254. Congenital, one-sided total bony closure of a choana. Operation with drill and chisel. BAUMGARTEN has also observed a case of partial bony closure of both upper halves of the choanæ.

KILLIAN.

255. CASSELBERRY observed eleven years ago in a woman, æt. thirty-nine, a tumor in the left nasal fossa, which filled it anteriorly and projected from it. The antrum Highmori, orbit, and naso-pharynx were not encroached upon. Its primary attachment extended along the horizontal plate of the ethmoid bone, including the adjacent cells. The tumor, removed with galvano-cautery, did not recur. Examination proved it to be a genuine pure fibroma.

M. TOEPLITZ.

256. POOLE's patient, a female, æt. twenty-four, who had been suffering for many years from nasal catarrh, and particularly during the last two or three years from profuse, offensive discharge, obstruction, and loss of smell, was operated for a large hypertrophy of the left lower turbinate. A hemorrhage ensued which had to be controlled by posterior plugging. After the removal of the tampon on the following day a body was found attached to the posterior end of the lower meatus, upon its outer

side, lying in a groove,  $2\frac{1}{2}$  inches long, with a loose and sharp anterior end, freely movable around its long axis, which was removed with dressing forceps, and together with two smaller pieces taken out on next day was composed of amorphous phosphates of sodium and calcium.

M. TOEPLITZ.

257. A bicycle rider, twenty-eight years old, struck his nose against the temple of the pole-rider of a tandem coming from the opposite direction. Epistaxis continued for four hours and a half; the root of the nose was swollen; fine crepitus due to air, and on deep pressure distinct bone crepitus without depression of the parts, were felt. The septum deviated to the left and occluded the left nostril. The wide right nostril contained a grayish mass close to the lower turbinate, which, easily removed, was found, on section, white, 1 cm in diameter, with a cherry stone as nucleus. The septum was not broken by the traumatism and the nasal bones not markedly depressed.

M. TOEPLITZ.

i.—PHARYNGEAL TONSIL.

258. KILLIAN (Worms). Embryological, anatomical, and clinical investigations on the tonsillar cleft and the soft palate. *Arch. f. Laryng.*, vii., pp. 167-203.

259. PELTESOHN. The etiology and prophylaxis of rheumatism. *Deutsche Medizinische Zeitung*, 1898, Nos. 61-66.

260. SENDZIAK. On the results of operations for adenoids. *Arch. f. Laryng.*, vii.

261. LAUFFS. The disappearance of prolapsus ani after removal of adenoids. *Arch. f. Laryng.*, vii.

262. HINKEL, F. W. Death following immediately an operation for naso-pharyngeal adenoids under chloroform. *Laryngoscope*, Aug., 1898.

258. In many individuals a probe can be passed for  $1\frac{1}{2}$  cm or more at the upper end of the tonsil into the soft palate. These spaces are very carefully described in this paper, and the results of careful clinical examinations of 100 tonsils and the surrounding structures are added.

ZARNIKO.

259. According to PELTESOHN, rheumatism represents a feeble type of pyæmia from the well-known connection between acute articular rheumatism and certain changes in the nose and pharynx. As a prophylaxis against rheumatism he recommends removal of all pathological conditions in the nose, mouth, and pharynx;



especially adenoid tissue. Finally, he emphasizes the importance of guarding against over-exertion, and advises regulation of the intestinal and renal functions.

BRÜHL.

260. SENDZIAK mentions the results of the operation for adenoids in improving the general condition, the intelligence, the hearing, deaf-mutism, reflex neurosis (enuresis, etc.), defects in speech, etc.

ZARNIKO.

261. A boy of five had suffered from prolapsus ani for three years. Permanent disappearance after removal of adenoids.

ZARNIKO.

262. A boy, aged eight years, was operated for adenoids under chloroform, which was taken badly, and was, soon after one ounce had been given, discontinued. The operation was then continued for a few moments, but the boy died just at its conclusion. The death was due to the habitus lymphaticus. Chloroform should be discarded and substituted by nitrous oxide and ethyl bromide. Eighteen deaths can be attributed in less than five years to the administration of chloroform in operations whose mortality is insignificant.

M. TOEPLITZ.

#### SOFT PALATE, PHARYNX, AND BUCCAL CAVITY.

263. RAOULT and FINCK. Congenital malformation of the palatal vault. *Arch. intern. de laryng., d'ot., xi., 4.*

264. LAURENS. A chronic abscess of the palatal vault. *Ann. des. mal. de l'or., du lar., xxiv., 9.*

265. WALSHAM, HUGH. Latent tuberculosis of the tonsil. *Lancet*, June 18, 1898.

266. WALSHAM, HUGH. On the occurrence of cartilaginous and bony nodules in the tonsil. *Lancet*, Aug., 1898.

267. JONAS, A. T. Removal of the epitheliomatous tonsil by pharyngotomy. *Four. Amer. Med. Assoc.*, Aug. 13, 1898.

263. A man, twenty-one years old, with no previous history of syphilis, presented an oval opening at the base of the uvula, involving the soft palate and passing off on each side as a narrow slit, to the outer branch of the palatal arch.

ZIMMERMANN.

264. In this patient two small fistulous passages emptied into the groove above the right tonsil, one proceeding to the soft palate, the other between the palatal arch and the tonsil.

ZIMMERMANN.

265. As a result of 34 post-mortem examinations of the tonsils, in cases dying of tuberculosis, 20 were found to be "more or less"

tuberculous ; with the exception of two cases only, nothing was present during life to call attention to the tonsils.

WALSHAM has also made microscopic examinations of tonsils and adenoids removed during life, but with entirely negative results, as regards tubercle.

He draws the following conclusions :

1. That the tonsils, instead of being almost immune from tuberculous disease, are very frequently affected.
2. That tubercle may be primary in the tonsil.
3. That the tonsils are very frequently affected, secondarily, in persons suffering from chronic pulmonary tuberculosis.
4. That when the tonsils are tuberculous the cervical glands, receiving the lymphatics from these organs, are also frequently affected with tubercle.
5. That the follicular glands at the base of the tongue are rarely found tuberculous.
6. That the tonsils may be affected from without or through the blood stream in acute miliary tuberculosis. CHEATLE.

266. Among 34 consecutive post-mortem examinations of the tonsils, WALSHAM found cartilaginous and bony nodules in two instances. He thinks the condition to be of foetal origin, that is to say, cartilaginous nests derived from the second branchial arch ; but Kanthack, to whom the sections were shown, regards it as merely a metaplasia from fibrous tissue into bone or cartilage.

CHEATLE.

267. CASE 1. Mechanic, æt. forty, suffered from bleeding, ulcerated, hard enlarged right tonsil with involvement of pillars. It was removed from without after formation of a triangular flap, then retraction of carotid, internal jugular, pneumogastric, and digastric, mylohyoid, and hyoglossus muscles. There was no recurrence for four years.

CASE 2. Farmer, æt. fifty-six ; the growth occupied left tonsil, projecting toward uvula, extending upward along the anterior and posterior pillars, and downward to margin of epiglottis, and externally adherent to soft sublingual gland, below which three hazel-nut-sized nodules were felt. After flap formation, the external jugular was ligated, the sterno-cleido-mastoid muscle diagonally divided, glands underneath, intimately connected with internal jugular, and both internal and external carotids, which were ligated, removed, pneumogastric isolated, and tonsillar mass excised. The buccal and pharyngeal mucous membrane could be

but partially united ; the remaining fistula closed after six weeks. After operation there were at first laryngeal spasms. On third day, the vision in the left eye was abolished, owing to embolus in central retinal artery, and the tongue became atrophied on the left side. After some improvement, the patient died from pneumonia three months later.

M. TOEPLITZ.

## REPORT OF THE MEETING OF THE NEW YORK OTOLOGICAL SOCIETY OF NOVEMBER 22, 1898.

BY DR. H. A. ALDERTON, SECRETARY.

*President, Dr. GORHAM BACON, in the chair.*

Dr. FRED. WHITING acting as Secretary *pro tem.*

Dr. E. B. DENCH presented a device of Haug's for instructing students in the appearances of the fundus of the ear. Also Jansen's forceps for cutting away the bony boundaries of the aditus ad antrum.

Dr. J. B. EMERSON reported the case of a naval officer, attached to the *Oregon*, who was injured by the concussion produced by gun-firing. Perfect healing was brought about.

Dr. DENCH had treated a similar case from the *Iowa*, also with perfect healing.

Dr. C. J. KIPP had treated a case, an officer on the *Indiana*, with rupture of both tympanic membranes, with the same result.

Dr. DENCH gave the history of a case of chronic suppurative otitis media, complicated by mastoiditis, on which he had operated. Cholesteatomatous material was found in the antrum and in the attic. He started to do a Stacke operation, but found a fistulous tract leading to the sinus, and from this tract pus flowed freely; then uncovered the sinus, which was incised, and a small clot completely obstructing the sinus was found. The clot was removed and the circulation re-established in both directions. Uninterrupted recovery. The first dressing was permitted to remain for eight days. This case was cited as an argument for thorough operation when a serious condition is encountered unexpectedly.

Dr. E. GRUENING advocated the thorough removal of the mastoid process and advised removal of the tip whenever empyema of the antrum is found. Also reported a case in which he

opened a healthy mastoid because of an hysterical tenderness of the tip.

Dr. F. M. WILSON related the history of a case of a woman who refused operation for mastoiditis following chronic suppuration of the middle ear. She left the hospital, but returned six weeks later and was operated upon. Two cortical perforations were found, one in the canal and one in the suprameatal triangle.

Drs. DENCH and TOEPLITZ had seen similar cases. Dr. Toeplitz's case had been complicated by facial paralysis.

Dr. DENCH had seen two cases which had originated meningitis by perforating the squama.

Dr. GRUENING related the history of a case of swelling of the membranous canal, some discharge, and marked mastoid tenderness. The swollen canal was incised, and a probe passed into the antrum through the incision in the canal wall. Later mastoiditis, with extensive destruction of the cellular structure of the process, was found.

Dr. A. H. BUCK deprecated the necessity of a secondary operation in mastoiditis. He advocated uncovering a small area of the sinus and of the dura over the tegmen tympani in all cases, especially in private practice. This procedure does no harm, and may save one from the necessity of doing a secondary operation.

Dr. GRUENING took exception to this advice, unless it be limited to those cases in which softened bone is found. Thought the procedure too radical.

Dr. J. L. ADAMS stated that he had made it a practice to remove the sigmoid groove in all cases.

Dr. TOEPLITZ thought that the sinus was infected sometimes when the sigmoid groove was healthy.

Dr. BUCK claimed that the inner table may seem healthy, but be perforated by small veins which infect the under side of the bone or contiguous dura, and this could be recognized if the groove be opened.

Dr. GRUENING thought that the apex cell was the key to the situation.

Dr. BACON agreed with Dr. Buck that the wall of the sigmoid groove may appear healthy and still the sinus be infected.

Dr. DENCH thought that a man exceeded his duty if he cut away healthy tissue. He had, however, seen a secondary operation as a result of leaving the walls of the aditus, which were carious, but not so recognized.



Dr. BUCK adhered to his original proposition.

Dr. W. P. MARPLE asked for an expression of opinion regarding the necessity for repeated incisions of the tympanic membrane.

Dr. DENCH believed that free incision will rarely fail, if made early, to abort further trouble, and does not usually require repetition ; mastoiditis seldom follows.

Dr. GRUENING had found it necessary to repeat the operation.

Dr. DENCH often combined incision of the tympanic membrane with an internal Wilde's. Does it under nitrous oxide anæsthesia.

Dr. TOEPLITZ had seen the galvano-cautery used to make a permanent opening.

Dr. WILSON asked for an opinion as to the treatment in cases of profuse suppuration subsequent to scarlet fever.

Advised to keep them in the hospital and feed them up.

## MISCELLANEOUS NOTES.

### ANNOUNCEMENTS.

SIXTH INTERNATIONAL CONGRESS OF OTOLOGY, 1899,  
LONDON.

#### PROGRAMME.

Monday, August 7th, 9 P.M.—Reception.  
Tuesday, “ 8th, 10 A.M.—Opening Meeting; President's  
Address; Election of Officers.  
3 to 6 P.M.—Papers.  
Wednesday, August 9th, 10 to 1.30 P.M.—Papers.  
Evening.—President's Dinner.  
Thursday, “ 10th, 10 to 1.30.—Papers.  
Friday, “ 11th, 10 to 1.30.—Papers.  
3 P.M.—Closing Meeting.  
Evening.—Dinner given by the British  
Otologists.  
Saturday, “ 12th.—Excursion.

The reception and meetings will be held at the Examination Hall of the Royal College of Surgeons and Physicians, Thames Embankment.

#### LIST OF SUB-COMMITTEES APPOINTED.

*Reception*: GEORGE P. FIELD, Vice-Chairman; EDWARD LAW, H. MACNAUGHTON JONES, ST. CLAIR THOMSON, RICHARD LAKE, Hon. Sec.

*Excursion*: DUNDAS GRANT, Vice-Chairman; WILLIAM HILL, W. R. H. STEWART, C. WAGGETT, P. MACLEOD YEARSLEY, Hon. Sec.

*Dinner*: T. MARK HOVELL, Vice-Chairman; J. W. BOND, J. B. BALL, L. A. LAWRENCE, Hon. Sec.

*Museum*: C. A. BALLANCE, Vice-Chairman; THOS. BARR, P. MCBRIDE, W. MILLIGAN, F. W. BENNETT, H. TILLEY, A. BROWN KELLY, C. E. FITZGERALD, A. LOGAN TURNER, H. R. WOODS, ADOLPH BRONNER, H. SECKER WALKER, JOBSON HORNE, ARTHUR H. CHEATLE, F. MARSH, A. SANDFORD, J. W. BARRETT, W. RIDLEY, STEPHEN PAGET.

The President-elect, Professor URBAN PRITCHARD, is Chairman of each Sub-Committee. The Treasurer, Mr. A. E. CUMBER-

BATCH, and the Secretary-General, Mr. CRESSWELL BABER, are also members of each Sub-Committee.

In order to make the Museum as complete and representative as possible, it is hoped that otologists from all parts of the globe will send specimens of the ear, nose, or naso-pharynx for exhibition.

All specimens should be sent to the Examination Hall, Thames Embankment, addressed to the Hon. Secretary of the Museum Sub-Committee, between the 16th and 26th of July, 1899; or they may be deposited by members themselves not later than Saturday, August 5th. It is earnestly requested that a thorough description of each specimen will be sent to the Hon. Secretary, ARTHUR H. CHEATLE, 117 Harley Street, London, before JUNE 30TH, to facilitate the arranging of the Museum and to insure insertion in the catalogue. It is desired to make the catalogue a permanent work of reference.

#### THE BRIGHTON, HOVE, AND SUSSEX THROAT AND EAR HOSPITAL.

On November 29, 1898, His Grace the Duke of Norfolk opened the first portion of the new building. The Hospital will now accommodate twenty in-patients, and is admirably designed and fitted throughout.

In three years' time more ground will come into the possession of the Hospital, and will be utilized for building a large waiting-room for out-patients, board room, etc.

The Hospital was founded as a Dispensary in 1878. In 1889 six beds were opened for in-patients, but owing to the increase in the work it was found imperative to obtain a new building.

We congratulate those who have so well carried out the scheme, and wish the Hospital every success in its new garb.

#### THE TEACHING OF OTOLOGY IN THE PROPOSED NEW UNIVERSITY AT BIRMINGHAM.

Mr. H. BENDELACK HEWETSON, of Leeds, in a letter to the *British Medical Journal*, November 26, 1898, draws attention to the fact that no provision has been made for the teaching of otology in the projected medical department of the new Birmingham University.

We are sure that this omission has only to be brought to the notice of those responsible for the election of professors and lecturers, and they will recognize the importance of the new uni-

versity being properly equipped in every branch, in order that the work undertaken may be thoroughly done.

#### APPOINTMENTS.

AGAR, MORLEY F., M.R.C.S., L.R.C.P., Assistant Surgeon, to be Surgeon to the Nose, Throat, and Ear Department of the Hospital of St. Francis, New Kent Road, London.

KELYNACK, T. N., M.D., M.R.C.P., Honorary Pathologist and Bacteriologist to the Manchester Ear Hospital.

MILLER, G. VICTOR, M.B., C.M. (Edin.), Eye, Ear, and Throat Specialist, North Riding Infirmary.

HAWKINS, G. T., M.R.C.S., Honorary Surgeon for Diseases of the Ear, Throat, and Nose to the Prince Alfred Hospital, Sydney, Australia.

Dr. FRANCIS J. QUINLAN, of this city, has been appointed Laryngologist and Rhinologist to Charity (City) Hospital, Blackwell's Island, by order of the Commissioners of Charity and Correction,

#### BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

The following gentlemen have been elected officers for the ensuing year, 1898-9:

*President*, Dr. MIDDLEMAS HUNT, Liverpool; *Vice-Presidents*, Dr. DAVISON, Bournemouth, Mr. JOHN BARK, Liverpool, Mr. WYATT WINGRAVE, London; *Treasurer*, Dr. MCNIEL WHISTLER; *Honorary Secretaries*, Mr. ST. GEORGE REID, Dr. FURNESS POTTER.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

##### JACKSONIAN PRIZE.

The College of Surgeons gives an annual prize of £12 for the best essay on a selected subject. Fellows or members of the College are eligible for competition. The subject chosen for 1899 is: "The Pathology, Diagnosis, and Treatment of Inflammatory Affections of the Nasal Fossæ and the Associated Sinuses and Air Cells."

Essays must be sent in not later than 4 o'clock on the 30th of December, 1899. A *nom de plume* or motto must be adopted, but a sealed envelope containing the name and address of the sender must also be enclosed.

The manuscript prize dissertation and every accompanying drawing and preparation become the property of the College.

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